The IRON AGE

November 5, 1959 A Chilton Publication

The National Metalworking Weekly



Distribution Export T. J. McGann-

Do You Know Your True Marketing Costs? P.63 What's the Next Crisis in Steel?

- P. 49

New System Combines Three Finishing Steps

- P. 87

Digest of the Week

- P. 2-3

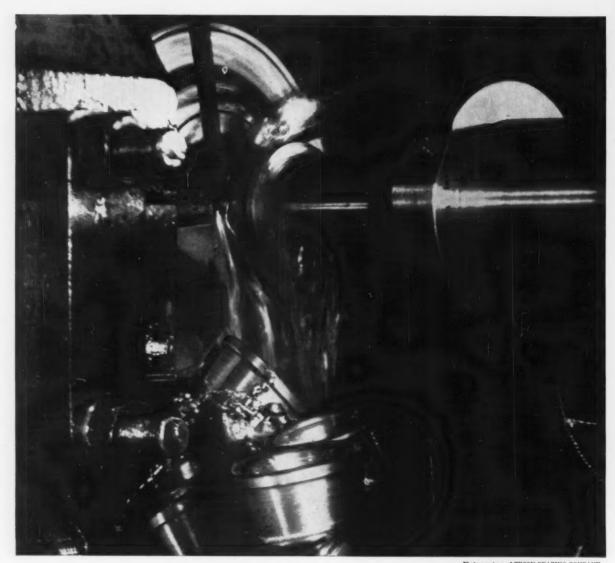


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How to purchase heads economically

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ON PURCHASING

Flanged and
Dished Heads

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The IRON AGE

November 5, 1959-Vol. 184, No. 19

Digest of the Week in

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STEEL SUPPLIES

Full Crisis—The true picture of the steel shortage is at last being seen by those who said it wouldn't



become critical. Now they have to realize shortages will last up to six months.

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STEEL EARNINGS

Third Quarter Losses—For some steel companies, third quarter losses are the first since the 1930's. As a result, capital spending programs are delayed, future plans will be reevaluated.

P. 51

LIFO PROBLEMS

How Strike Hurts — Companies using LIFO method of valuing inventories for tax purposes face problems. Strike has wiped out steel stocks and they can't be rebuilt until after tax time.

P. 52

SALES TAX

To Meet Costs-There is new

▼ COVER FEATURE

cost cutting: Marketing costs come under close scrutiny in Consultant T. J. McGann's new series on distribution cost analysis. Photo taken at Peter A. Frasse & Co. warehouse in Lyndhurst, N. J. P. 63

Metalworking

talk in Washington behind a national sales tax. Mounting costs of keeping up with Russia in the cold war make it necessary.

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BUSINESS AND POLITICS

Stable Mixture—Aerojet-General proved industry and politics can be combined. Company's plan for politically better-informed workers has turned out well.

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FEATURE ARTICLES

DRY PHOSPHATIZING

Aids Metal Cleaning — Do the metal parts you produce demand a near-perfect finish at high application costs? Then you should be interested in a new system that introduces dry phosphatizing into the cleaning and painting cycle. Metal parts get the full treatment in one continuous operation. P. 87

ROUGH SURFACES

Ease Bonding—Cast iron is mechanically bonded to aluminum using the diecasting process. Key to the bi-metallic interlock method is the rough surface of the as-cast iron insert. It provides better strength, and improves resistance to corrosion and wear. It's a boon to the diecasting industry.

P. 90

POST-TREATMENT

Solves Shot-Blasting Problems— Having trouble with shot-blasted sheet and plate steel? This analysis shows how to overcome most of the so-called problems that occur when taking on shot-blasting methods. Familiarity with the process can insure success.

P. 94

COMBINING PLASTICS

With Metals—There are many areas where laminates are improving the traits of aluminum, copper and steel. Case histories prove they do their job well. The result is a third material, certainly the answer to many problems.

P. 98

RADIANT HEATING

Halt Rising Costs—A seven-barrel-furnace line, for tube annealing, features special burners. And here's how fast, uniform radiant heating does the job at reduced production costs. One plant cuts costs by 25 pct. P. 100

MARKETS & PRICES

TOOLMAKERS

Look at Problems—Tool and die trade association knows its industry has problems. But it's facing up to them and making progress toward their solution. P. 54

APPLIANCES

Record Threatened — Sales this year are hitting new highs. But the steel shortage may force some shutdowns and take the steam out of the market.

P. 56

MORE TRUCKS

Greater Variety — Truckmakers are expecting their second biggest year in 1960. One reason is that they're offering a greater variety to the user.

P. 67

STEEL SUMMARY

Capital Spending—Effects of the steel strike are now cutting into capital spending programs. Up to now, it is mostly a delaying action, but re-appraisals are becoming the rule.

P. 129

ELECTRICAL CONTROLS

Slowdown Ahead — Makers of electrical controls report no bad effects from the steel strike yet, but expect a sales slowdown this quarter.

P. 130

NEXT WEEK

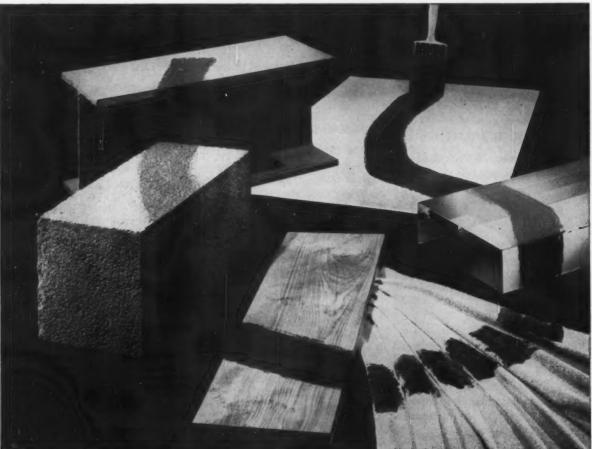
The Future—R. Buckminster Fuller, called a genius by many, is coming up with new ideas that will mean bigger markets for metalworking. Here he explains a structure to Eric West, president, Aluminium Ltd. Inc.



NEWEST WEAPON IN THE WAR AGAINST CORROSION AND ABRASION!

Coro-Gard 1706

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CORO-GARD 1706 Coating speeds production, provides unusually high coverage to cut costs. It brushes as easily as paint, is self-priming, yet goes on vertical surfaces with minimum sagging. For steel, aluminum, wood, concrete, cloth and some plastics—wherever corrosion or abrasion must be fought—specify new CORO-GARD 1706 Coating. It provides maximum protection at low cost.

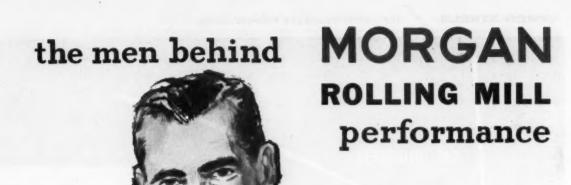
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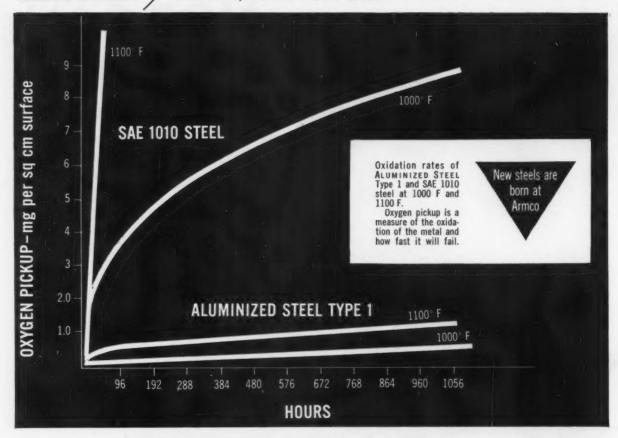
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ground of designing and building rolling mills—you

have an unbeatable combination.

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Research Data Shows Why Armco's Special Aluminum-Coated Steel Withstands Heat

Comparative oxidation rates indicate remarkable durability of corrosionresistant Armco ALUMINIZED STEEL Type 1 at high temperatures.

Oxidation rates of ALUMINIZED STEEL Type 1 at 1000 and 1100 F compared with those of SAE 1010 steel demonstrate why this special Armco Steel has become a popular material for parts that must resist heat.

The hot-dip aluminum coating applied by a special Armco-developed process prevents oxygen from destructively scaling the base metal at temperatures up to about 1250 F. In addition, Aluminized Steel also provides good corrosion resistance. This unique combination of steel and aluminum withstands the corrosive attack of combustion products and condensates.

Because Aluminized Steel Type 1 combats both heat

and corrosion and because its steel base gives parts high strength, it can be used in thinner gages and at higher temperatures than other metals.

For these reasons, Armco's special aluminum-coated steel has proved to be the most economical and durable metal for auto mufflers, heat exchangers, combustion chambers, industrial ovens, appliances, and similar products requiring resistance to heat and corrosion. Put the cost-cutting, performance-improving advantages of Armco Aluminized Steel Type 1 to work in your products. Write us for complete information. Armco Steel Corporation, 3249 Curtis Street, Middletown, Ohio.

ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation

Second-Class Nations: When Will We Become One?

While we have been enjoying the luxury of a steel strike, changes in our fabric have taken place. They are not in our favor.

This isn't one of those imagined cases where we are slack but will pull ahead when we really want to. We are definitely becoming a secondclass nation.

It may be too late to do much about it. Few of us are willing to admit what our lost leadership, our inability to sacrifice for country, and our laxness are doing to us.

For most of us, patriotism is a word in the dictionary. It would take some searching to find manifestations of it today. Recognition of our blessings is rare indeed.

It would seem that the slogan most of us believe is something like this: "Inflation is far worse than the danger of Soviet domination." That is only partly true. To swallow it whole is dangerous.

The grins and mockery that met the first Soviet space success have disappeared. In their place has come a national hypnotic unawareness and a nightmarish frustration for those who sense what is happening.

What is the truth? We have become a soft nation. We have not sought for an answer to Communism. Nor have we shown the merest sense of realizing our slow but certain deterioration.

It is no longer a case of awakening our people to our national purpose. Maybe most of us have none. The President often must sense that he is talking to thin air; not to a people who can be aroused; a people who sense possible disaster; a people who ought to stand up with purpose, deeds and enthusiasm instead of furnishing weak and unsupported words.

The Russians have a purpose. It is a deadly one. Most of them sacrifice and plod to make their country what it is fast becoming—a major nation giving us a run for our money.

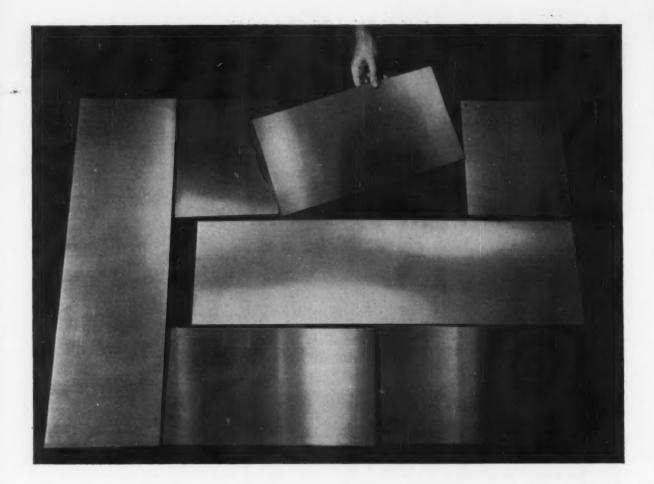
Of course there is no chance of their overtaking us tomorrow—but there is every chance of their passing us if their science is in any way a criterion of other things they will be doing.

We don't have the purpose of the Reds. And we won't even have a taste of the dedication of the Israelis—who go through every known travail just to exist as a nation.

Will it take a world calamity full of bitter tears and frustration to bring us to our sense of purpose for our country?

You may best wonder—because maybe it is too late. We may never be ready except as a supplicant carrying the tools of appearement.

Tom Campleee Editor-in-Chie



How many sheets could <u>you</u> make from today's waste aluminum?

If you tend to shrug off scrap as an unavoidable business loss, here's a plan that can change your thinking. It's the Ryerson Aluminum Sheet Plan that makes exact lengths and widths available to most users—generally on a net weight basis.

Under this plan, you order the exact sizes you need for your production runs—and Ryerson produces them quickly from coil stock on the most modern and accurate slitters and cut-to-length lines. You thus avoid buying metal that you cannot use...save the time and labor of

processing within your own plant. And in addition, Ryerson can schedule deliveries to match your production pace, enabling you to convert storage space to more productive use and release capital tied up in inventories.

Here you'll find the widest selection of alloys, tempers and thicknesses plus expert technical help on selection and fabrication problems. So ask your Ryerson representative to review your production requirements with you and show you how to eliminate your scrap problems immediately.



NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

Exothermic Brazing

The operating principles of the old thermit welding process are now being utilized to braze stainless sandwich panels. The source comes from the heats of reaction during a reduction of a metal oxide by an active metal, provided proper control is exerted over the reactions. The method operates at temperatures less than $1000^{\circ}F$ and initiates an exothermic release of heat.

Rare Earth Metal Powders

Now available are rare earth metal powders such as mischmetal, cerium, lanthanum, and didymium. In sizes down to —325 mesh, these powders are handy for powder metallurgy research. Fields for rare earth alloys include propellants, pyrophorics, flash powders, components for electronic tubes, and solid-state devices.

Aluminum Auto Muffler

An aluminum auto muffler, supposed to eliminate need for replacement and dual exhaust systems, is in the works. Competitive in cost and weighing 60 pct as much as present mufflers, it could arrive before the end of the year. The muffler is cast and can be formed to meet any frame and body construction or design.

Strain Gage Works At 400° F

New strain gage operates at temperatures over 400°F. It can be applied with an epoxy adhesive. Connections to the gage are made with a high-temperature solder such as 95 pct Sn-5 pct Sb. The solder, which melts between 430°-450°F. limits the gage's operating temperature.

Forms Exotic Metals

Recent tests with the Androform process confirms that it has high potential for compound curved parts, such as body panels. Formerly limited to light metals, it has formed 17-7 PH and PH 15-7 Mo materials, handles auto sheet stock readily. Process requires little tooling, is programmed with flexibility of tape-controlled machines. It promotes substantial materials and scrap savings, will produce 1200 parts an hour.

Insures Ingot Quality

A practical system of quality control is bringing one speciality steel company a step closer to achieving the "ideal ingot"—one that has uniform analysis throughout. The company reports major improvements in the consistent behavior of bars and billets. The system controls four variables: scrap charge, melt composition, bath temperatures, and solidification.

Mask Before Welding

Avoid difficulty in welding a galvanized surface by masking the weld areas with a hot water solution of potassium dichromate before galvanizing. Used by Westinghouse's lighting division in Cleveland, the treatment leaves a clean surface for welding on the bottom of transformer tanks. After welding, the ungalvanized surface is shot-blasted and zinc-sprayed.

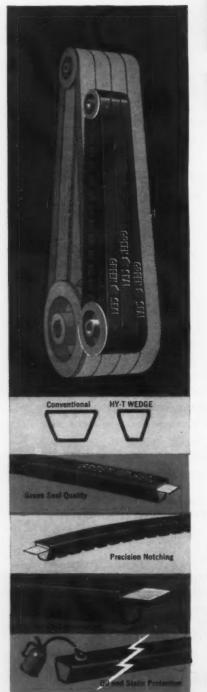
Protect During Re-entry

Results of the search for a material suitable for missile protection during re-entry are now available. A collection of scientific papers on the behavior of reinforced plastics at very high temperatures was released by the General Electric Co. Studies indicate, that for short time exposures, such as are met in re-entry conditions, certain reinforced plastics are extremely durable.

Discusses Nine PH Steels

A report, released to industry by Battelle's Defense Metals Information Center, contains comprehensive mechanical and physical data for nine commercial precipitation-hardenable steels. Three classes discussed are martensitic, semi-austenitic, and austenitic steels.

IT'S NEW! IT'S ANOTHER GREAT GREEN SEAL V-BELT-



HY-T WEDGE

• economical – cuts drive costs

up to 20% • compact – saves up to 50%

in space • powerful – fewer

belts deliver equal horsepower

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Now Goodyear brings you the HY-T WEDGE, a great new V-Belt design that's stripped clean of free-loading "fat." It's a belt that's all muscle—capable of handling substantially greater horsepower—on more compact drives—at lower costs.

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HY-T WEDGE—in larger-drive sizes—gives you multiple-ply construction for super-stamina.

And HY-T WEDGE gives you - without extra cost - built-in protection against oil attack and static electricity build-up.

Here, then, in the HY-T WEDGE, you have a new kind of V-Belt to handle the toughest belting jobs with smaller, more efficient drives—at never-before low cost.

For full details, check with the G.T.M.—Goodyear Technical Man—through your Goodyear Distributor. Or write Goodyear, Industrial Products Division, Lincoln 2, Nebraska, or Akron 16, Ohio.

HY-T WEDGE with the



HY-T WEDGE, Green Seal-T. M. 's The Goodyear Tire & Rubber Company, Akres, Okto THE GREATEST NAME IN RUBBER

Bold Approach

When comprehensive designer R. Buckminster Fuller first started designing, people were interested, but skeptical.

After all, many of his designs were hardly very practical—a onepiece bathroom, a house hanging from a center post on cables, a series of structures that didn't really do anything.

Satisfied Customers—But things changed. Mr. Fuller put one of his geodesic domes on the Ford Motor Co. rotunda that weighed only 8½ tons when a standard dome would have weighed 160 tons. And he did it in 30 days with unskilled labor.

He adapted his dome for the U. S. Marines, and they called it "the first major basic improvement in mobile military shelters in the past 2600 years."

And he spotted other countries as much as five months, then put up buildings to house U. S. exhibits in international trade fairs within 48 hours, again with unskilled help.

Waiting for Metals—What a lot of people didn't know was that very early in the game "Bucky" Fuller realized that the missing link in making his spectacular ideas practical was the right materials. He estimated that the metal industry would come up with the right alloys in about 25 years—his target 1952.

In the meantime he busied himself with purely scientific experiments without any concern for the commercial aspects.

Now, recognized as a genius by most designers and architects, R. Buckminster Fuller is charting bold new courses for buildings of the future. And he is leaning heavily on metals—which, incidentally, have and are coming through as he had expected.

To find out what his approach means—and will mean—to metalworking, read next week's Special Report.

Why Nikita Smiles

For the rhymes below we're grateful to John H. Reeve, Waynesboro, Pa. He admits the poetry could be better, but who'll argue with the message?

Let's all strike for higher pay and give less effort every day,

Security is our birthright,

unlike our forebearers who did fight to make this country great and strong,

Why, their philosophy was wrong! "Something for nothing" is what we need,

So let's relax in thought and deed, And let our statesmen not forget,

There are many more ways to tax us yet.

Discourage those with strength and drive,

Why keep outmoded dreams alive Of those who still believe it's right to get in there each day and fight?

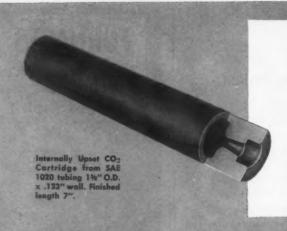
And forge ahead by giving more than perhaps the boss is paying for,

Let's all relax, there's no denying We've got to keep Nikita smiling.



"I said, 'For some silly reason the foreman doesn't like me,' Fathead."





Advanced upset technique saved O.E.M. 25%..."Task-Forging" formed neck 4 times wall thickness in 1 pass (Conventional practice requires 4 passes)

- Customer now buys only 1 part—machining and assembly of insert eliminated
- Strength of pressure vessel increased by 1-piece design
- 18% reduction in scrap customer trim at sealed end eliminated

овјестиче: How to increase your profit margin метнор: By ingenious upsetting of unusual parts



Flanges and boss upset on "Task-Forged" tube...machining reduced 33%, metal 15%

- Now 1 piece instead of 4—originally a weldment of 2 flanges, a boss and a tube
- Greater strength—toughness portioned where needed
- More accurate than mill tolerance of tubing

Some call it ingenuity. At COMMERCIAL it's the basic philosophy for keeping a long step ahead of competition,

Very simply...our customers are in business to show a profit; we contribute by delivering unusual upset forged components at a better cost—the result of complete design analysis and 35 years of continually perfecting new upsetting techniques that go far beyond conventional limits.

COMMERCIAL's "Task-Forging" team of engineers are experts in establishing the production techniques and die design patterns for extraordinary upset requirements ... particularly heavy forgings involving the internal, external and pierced displacement of metal.

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plant which produces uniformly sound, metal quality

upset forgings which are performance-tested and very often include design improvement for the customer's benefit. Facilities include upsetters from 1½" through 8"...threading equipment handling up to 6½" diameter stock, and rough or semi-finished machining.

These unusual forgings typify customer benefits which resulted from a little ingenuity and a lot of "know-how" as applied by this "Task-Forging" team of experts. It is just possible that they can discover hidden profits in your component parts. No obligation. Address: Commercial Shearing & Stamping Co., Dept. K-45, Youngstown 1, Ohio.

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All About Overtime

Sir—May I call your attention to an inaccuracy in the article which appeared in your Oct. 15 issue, on the Associated Industries of Cleveland conference.

I took part in this program and answered some questions from the floor. According to your report, one question asked was: "What do you do to a worker who refuses to work overtime?" and I am quoted as having given the following answer: "We will take disciplinary action including up to a 30-day layoff for those with a record. We consider up to eight hours per week reasonable overtime."

This does not accurately report the substance of what I said. In my formal remarks I stated it was important for management to be able to require employees to work reasonable overtime. I indicated that our company could take disciplinary action for an employee's refusal to do so. I did not state, or infer, that the maximum penalty would be a 30-day layoff.

It could be more, for an employee with a bad record. Later, the following question from the floor was asked: "What do you mean by reasonable overtime?" I stated there had been no precise definition but that years ago we had an arbitration case in which it was ruled that eight hours of overtime (eight hours beyond the employee's regular shift on a particular day) was not unreasonable. I expressed no opinion concerning how many hours of overtime per week would be considered reasonable.-H. D. Garrett, Labor Relations Staff, General Motors Corp., Detroit.

Coated Metals

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Sir—Will you please send me ten reprints of the article on "How to Get More for Your Metalworking Dollar"—Coated Metals With Nonmetallic Finishes," which appeared in your Oct. 22 issue.

I am much better informed about coated metals after reading the information contained in this fine article.—H. C. Fitton, Adv. Mgr., Weirton Steel Co., Weirton, W. Va.

Sir—Please send me a reprint of this article—A. J. Cohen, General Mgr., Standard Can Corp., Leetsdale, Pa.

Sir—Will you please send me four reprints of the article on coated metals which appeared in the Oct. 22 issue.—H. L. vonEnde, Mgr., Sheet and Strip Metallurgy, United States Steel Corp., Pittsburgh.

Sir—We would very much appreciate another copy of "How to Get More for Your Coated Metals Dollar."—George Aird, Dept. of the Navy, Inspector of Naval Material, Phila.

In all cases, reprints are on the way.—Ed.

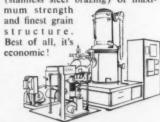


"We're tightening our belts, Regan. You're the first notch."

HOWARD GILBERT, Hayes Asst. Sales Mgr., tells about the . . .

"VACUUM AGE" OF HEAT TREATING

A major New York manufacturer of aircraft equipment recently reported their Hayes Vacu-Master Cold Wall Furnace was paying off in many ways — providing rapid cycling, simplified work handling, and complete production flexibility. Additionally, the vacuum furnace has eliminated need for atmosphere equipment . . and produced work (stainless steel brazing) of maxi-



Similar Success Stories come to us from other users of Hayes Furnaces. Successful heat treating of

"exotic" metals (tantalum, titanium, niobium, etc.) in the 2600 to 4500°F range. Successful sintering, hardening, annealing, and degassing at high production rates. Success stories all around!

The "Universal Atmosphere" has Universal Applications

Unlike other "atmospheres," vacuum has virtually no job limitations. Here's where the ingenuity of

Hayes development engineers comes into play. By coordinating furnace design with job

requirements . . . and by PROVING RESULTS in the Hayes lab . . . Hayes vacuum furnace engineers assure the customer a "RESULTS GUARANTEED" installation every time. I'd like to invite you to advance your heating into the "vacuum age" . . . with HAYES!

Write for vacuum Bulletin 5709A.

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BROWNHOIST BRIDGE CRA MOVES 700 TONS of material EVERY HOUR for Large Canadian Steel Mill





This fast-operating storage and rehandling bridge is one of 3 Brownhoist bridge cranes used in the Blast Furnace Department of one of the largest steel mills in Canada. Controlled from a man-riding trolley, the crane, equipped with an 8 ton ore bucket, requires only 40 seconds per trip to haul 700 tons of iron ore, limestone or coke per hour! Bridge span is 225 feet and 364 feet overall. Cantilevers are 86 and 53 feet, while the crane measures 63 feet from foundation rail to trolley rail.

Relied upon for high-speed, high-capacity materials handling, Industrial Brownhoist bridges and boat unloading equipment are found in mines, quarries, docks and steel mills throughout the world. Brownhoist also manufactures Diesel-Electric locomotive cranes from 25 to 90 tons and railroad cranes with capacities up to 250 tons.

Write for general catalog No. 562; it contains complete information on profitable Industrial Brownhoist equipment.

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INDUSTRIAL BROWNHOIST CORPORA-TION . BAY CITY, MICHIGAN . DISTRICT OFFICES: Birmingham, Cleveland, Philadelphia, LOCOMOTIVE CRANE Chicago, San Francisco, Montreal.

MEETINGS

NOVEMBER

National Tool & Die Manufacturers Assn. — Annual convention, Nov. 4-8, Statler Hotel, New York. Association headquarters, 907 Public Square Bldg., Cleveland.

National Foundry Assn. — Annual meeting, Nov. 5-6, Hotel Roosevelt, New York. Association headquarters, 53 W. Jackson Blvd., Chicago 4, Ill.

Metal Treating Institute — Annual meeting, Nov. 5-7, Hotel Sheraton, Chicago. Institute headquarters, 271 North Ave., New Rochelle, N. Y.

National Assn. of Aluminum Distributors — Annual meeting, Nov. 8-11, El Mirador Hotel, Palm Springs, Calif. Association head-quarters, 1900 Arch St., Philadelphia.

Steel Founders' Society of America
—Technical & operating conference, Nov. 9-11, Carter Hotel,
Cleveland. Society headquarters,
606 Terminal Tower, Cleveland.

Plumbing Brass Institute—Annual meeting, Nov. 9-11, Barbizon Plaza Hotel, New York. Institute head-quarters, One Gateway Center, Pittsburgh 22, Pa.

National Electrical Manufacturers Assn.—Annual meeting, Nov. 9-13, Traymore Hotel, Atlantic City, N. J. Association headquarters, 155 E. 44th St., New York 17.

National Assn. of Waste Material Dealers, Inc.—National fall meeting, Nov. 11-15, Diplomat Hotel, Hollywood Beach, Fla. Association headquarters, 271 Madison Ave., New York 16.

National Screw Machine Products Assn. — Annual fall membership meeting, Nov. 15-19, Americana Hotel, Bal Harbour, Fla. Association headquarters, 2860 E. 130th St. Cleveland.

(Continued on P. 16)



2½-gallon ressurized water

2½-gallon anti-freeze (loaded stream)

The easiest-to-operate portable fire extinguishers on the market today!

Here, for the first time, is a practical, sensible design for pressurized water and loaded stream extinguishers. No inverting, no bumping, no valves to turn, no pins to pull (safety lock automatically releases when nozzle removed).

These two new stainless steel Kidde portables feature simple, one-two operation—just aim at fire and push the button. Notice the way the hose is stored, safely out of the way. Notice the wide-open handle—to insure fast action even in gloved hands. Notice the dust-and-waterproof pressure gauges—which show at a glance whether the units are fully charged. All of the features—plus the slim design and light weight of these Kidde portables—make them the easiest-to-store, easiest-to-carry, easiest-to-operate portables on the market today.

Approved by Underwriters' Laboratories. Available in pressurized water for fires in ordinary combustibles, or anti-freeze loaded stream for fires in ordinary combustibles and flammable liquids. For more information, write to Kidde today.



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959



From a solid block of steel, a solid ring has been formed, to required size and shape. The accuracy possible with this process greatly minimizes the need for further finishing. Diameters are from 5 to 145 inches, weights up to 14,000 pounds. Materials include carbon and alloy steels, stainless, tool steels, titanium. Facilities available for machining and heat treatment.

Write for descriptive bulletin.



MEETINGS

(Continued from P. 15)

Packaging Institute—Annual meeting, Nov. 16-18, Statler-Hilton, New York. Institute headquarters, 342 Madison Ave., New York 17, N. Y.

Aircraft Industries Assn. of America—Annual meeting, Nov. 18-20, Arizona Biltmore Hotel, Phoenix, Ariz. Association headquarters, 610 Shoreham Bldg., Washington 5, D. C.

National Machine Tool Builders' Assn.—Annual meeting, Nov. 19-21, The Greenbrier, White Sulphur Springs, Va. Association headquarters, 2071 E. 102nd St., Cleveland.

The American Society of Mechanical Engineers — Annual meeting, Nov. 29-Dec. 4, Chalfonte Haddon Hall, Atlantic City, N. J. Society headquarters, 29 W. 39th St., New York.

American Institute of Steel Construction, Inc. — Annual convention, Nov. 30-Dec. 3, The Boca Raton Hotel & Club, Boca Raton, Fla. Institute headquarters, 101 Park Ave., New York.

DECEMBER

Electric Furnace Steel Committee— 17th Annual conference, Dec. 2-4, Hotel Cleveland, Cleveland. Committee headquarters, 29 W. 39th St., New York.

Electronic Industries Assn.—Quarterly meeting, Dec. 2-4, Statler Hilton, Los Angeles, Calif. Association headquarters, 1721 DeSales St., N. W., Washington, D. C.

National Assn. of Manufacturers— Annual meeting, Dec. 2-4, Waldorf-Astoria, New York. Association headquarters, 2 East 48th St., New York.

National Warm Air Heating & Air Conditioning Assn.—Meeting, Dec. 2-4, Chase Park Plaza Hotels, St. Louis, Mo. Association headquarters, 640 Engineers Bldg., Cleveland.



The industry and Aetna's engineers work together in developing new ideas on seamless. Here is part of the new Aetna-built Seamless Mill of The Youngstown Sheet & Tube Co. at Indiana Harbor.

Seamless Pipe and Tube Mills

Most of the ideas about making seamless have been worked out between the producers and Aetna-Standard in their more than fifty years of association. Known as the "pipe mill people", Aetna has built most of the Seamless Mills in this country and around the world.

Aetna designs and builds several basic types of Seamless Mills. The Plug Mill or Two-High Rolling Mill is most generally used for the production of all sizes of seamless pipe and tubing. The Mandrel-Type Continuous Rolling Mill features high-volume production of small- and medium-sized tubing. The Assel Mill produces high-quality tubing to close tolerances, as required for anti-friction bearings and mechanical tubing.

In combination with the basic Plug Mill or Mandrel Mill, Aetna builds the Stretch Reducing Mill. This unit has the advantage of economical production of small-sized tubing at maximum volume, while maintaining the high tonnage production of the basic Seamless Tube Mill. Another type—the Rotary Pipe Expander—produces pipe of larger diameters than can economically be produced on the Plug Mill.

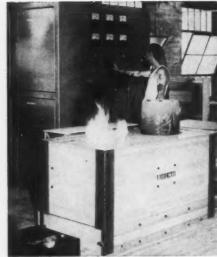


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Metal losses, as encountered in conventional melting practices, are reduced to insignificance by INDUCTOMELTING. The savings realized with Inducto melting equipment, though substantial in all metals, are particularly great in the easily oxidized or volatile alloying materials.

One non-ferrous foundry cut melting losses 80% through INDUCTO-MELTING. This was made possible by higher melting speeds and the remelting of chips and turnings from machined castings which could not be done with the previous equipment without extremely high metal losses.

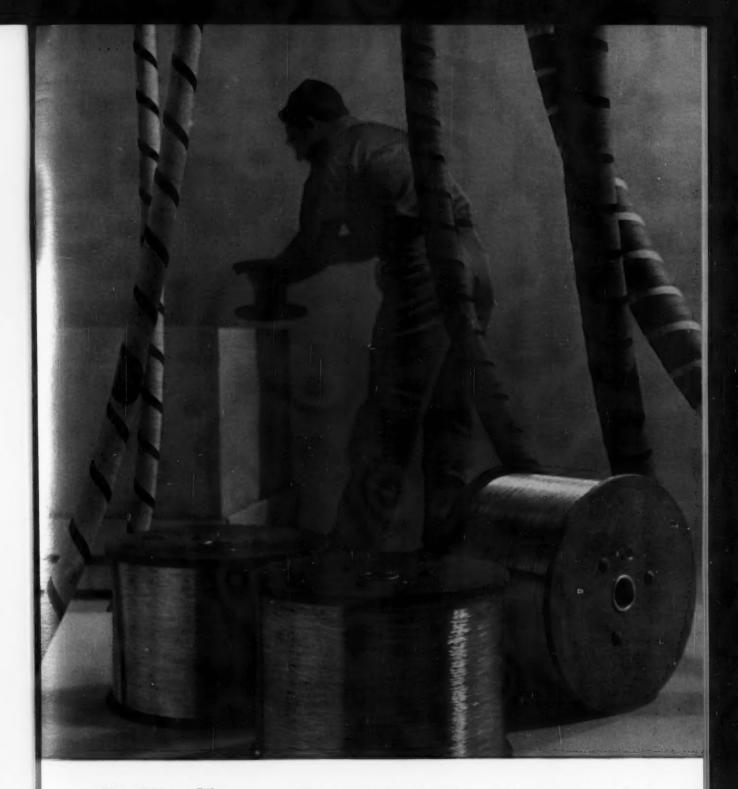
Why? Why should Inducto melting equipment provide such savings in metal? Because every component is designed and selected for the highest possible efficiency so that you can attain all the benefits of high-frequency induction melting at its best. With Inducto equipment, you get the highest possible melting speeds and the most accurate temperature control in the melting field today. Write for complete details—ask for Bulletin 70. Inductotherm Corporation, 412 Illinois Ave., Delanco, N. J.

*INDUCTOMELTING is high-frequency induction melting PLUS the additional advantages of Inducto design features and engineering techniques.



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The best things come
in no-charge
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When you buy Roebling Hose Reinforcing Wire it is delivered to you on no-charge spools that mean savings to you.

This modern method of packaging does away completely with deposits and the bookkeeping involved; it contributes, too, to lower freight costs. Thus, you avail yourself of a precision-made and quality controlled product, without any handling, shipping and inventory inconveniences.

Roebling Hose Reinforcing Wire, used for braiding reinforcement, is produced in a complete range of sizes. Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

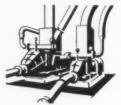
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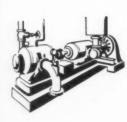
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Pumping Systems, Airveyor® Pressure and Vacuum Conveying Systems, and F-H Airslide® Fluidizing Conveyors are completely sealed to prevent both contamination of the product and any leakage of dust, etc., into the surrounding area. They are used to move dry, granular and pulverized materials to and from cars, ships, trailers, storage and processing points.



Fuller Rotary Compressors and Vacuum Pumps are vibration-free, can be installed anywhere, even on balconies. Fewer moving parts mean minimum maintenance. Compressors and Vacuum Pumps handle air and gases from 30 to 3300 cfm at pressures to 125 lb. gage. Vacuums to 29.95 in. (referred to 30-in, barometer).

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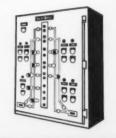
Fuller Horizontal and Inclined Grate Coolers are compact, easily installed for fast, efficient cooling of materials such as nodulized phosphate rock, pebble lime, ores, dolomite, iron nodules and Portland cement clinker from 2800°F. or higher to any desired point within a reasonable range of atmospheric temperature.





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After a full year of testing,
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Fatigue-proof steel bars for clutch shafts
...saves 25%!

Stressproof for shrub bars ... saves 30%!



FATIGUE-PROOF replaced leaded 4140, heat treated to Rockwell 34-35 C. Result: over-all saving of 25%!

If you're making parts requiring strengths in the tensile range of 140,000 to 160,000 psi, you'll be interested in these cost-reducing advantages of LaSalle fatigue-proof:

No heat treating necessary . . . no quench cracks, warpage, or other problems associated with heat treating.

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Exceptional uniformity from bar to bar, size to size, lot to lot.

PLUS excellent wearability, resistance to fatigue, and dimensional stability.

STRESSPROOF replaced C1045 and eliminated heat treating and related operations. Result: production costs reduced 30%.

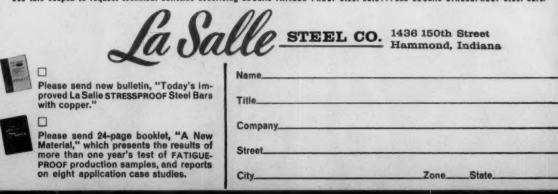
If you're producing parts that call for minimum yield strengths of 100,000 psi, you'll want to know more about these important benefits of STRESSPROOF steel bars:

STRESSPROOF means high strength without heat treating . . . it replaces steels such as .40 carbon alloy, as well as other heat treated and alloy steels, such as 8640, 4140, C1045, C1141, and C1137.

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Use this coupon to request technical bulletins describing La Salle FATIGUE-PROOF steel bars...and La Salle STRESSPROOF steel bars.



The Aluminum Man*...

*Eight years as an aluminum-for-industry enthusiast, Thomas T. Omaye, Alcoa Distributor Salesman for Aluminum Products Hawaii, Ltd., Honolulu, Hawaii, is another of the proud men who make service to industry their careers, through knowledge of aluminum.

He connects economy to quality with tube and pipe

Alcoa®Aluminum Tube and Pipe . . . available for prompt delivery from locally warehoused stocks . . . is light in weight, versatile and offers you important cost advantages. Your local Alcoa Distributor Salesman, The Aluminum Man, has the most commonly used alloys available at your immediate call. Check with him before making a buying decision about tube and pipe.

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Your Aluminum Man can give you specifications, technical data and many valuable suggestions for the use of Alcoa Aluminum Tube and Pipe. Ask him about other Alcoa Mill Products too. His vast store of knowledge is yours for the asking, a reflection of Alcoa, the aluminum pioneer that stands behind him. Keep in mind that this help and advice are ever available to you, regardless of the size of your order. Always be sure to specify Alcoa Aluminum. It's the light metal with the bright future that's being seen in more places . . . more and more!



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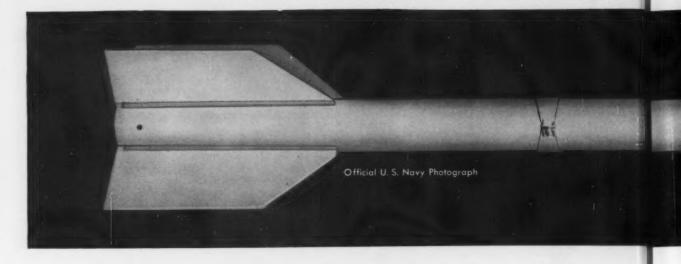
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THE IRON AGE, November 5, 1959

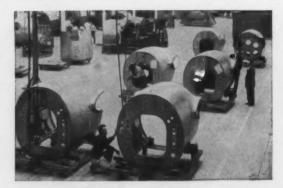




REPUBLIC TITANIUM is used in dozens of structural components and details in the Martin P6M SeaMaster, including engine nacelle center beams such as the one illustrated. Commercially pure titanium and titanium alloys supplied by Republic increase strength and heat resistance, reduce weight. Republic Titanium Alloys are among the strongest produced, offer exceptionally high strength values at elevated temperatures.



REPUBLIC'S NEW, TYPE HS6460 METAL POWDER is ideal for sinterings of highly stressed components in aircraft and missiles. Provides minimum tensile strength of 60,000 psi at 6.4 density as sintered... 100,000 psi after heat treatment. Less than .004% shrinkage from die size at 6.4 density. Available in quantities up to and including 12 tons or multiples. Can be used with existing operating equipment. Mail coupon for technical data sheet.

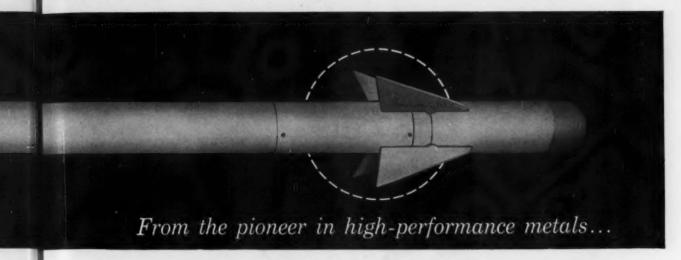


REPUBLIC ENDURO® STAINLESS STEELS—types 301 and 302—are currently being used by Solar Aircraft Company in the fabrication of complete engine nacelles for Navy P2V patrol bombers. Stainless construction offers greater strength, permits use of lighter gages, increases currosion and high temperature resistance. All types are readily formed into desired shapes by the usual commercial methods. Send coupon for complete information.

REPUBLIC



World's Largest Producer of Missile Metals—Titanium,



TYPE 4130 ALLOY STEEL FINS FOR THE SIDEWINDER

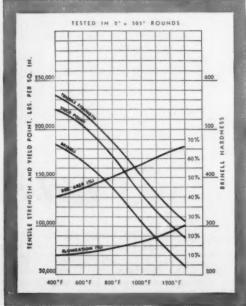
Close-tolerance, delicately contoured fins for the Sidewinder airto-air missile are currently being produced from Republic Type 4130 Alloy Steel by the Storms Drop Forging Company, Springfield, Massachusetts. Choice of this high-strength alloy, according to Storms, was dictated by extreme performance requirements.

Republic 4130 offers exceptionally high strength-to-weight ratios with the highest strength values. As seen at right, tensile strength in the heat-treated condition is over 230,000 psi after tempering at 400°F., with a Brinell Hardness of 460. Uniform response to heat treatment assures complete deep-hardening penetration.

The Storms Drop Forging Company reports no production difficulties involved in the use of Republic 4130. Fins are produced from hot-rolled 1½" diameter 4130 bars in successive forging, hot trimming, grinding, wet tumbling, and coining operations.

Republic has pioneered in the development and production of new metals to resist heat, reduce weight, or increase strength. With constantly expanding research as well as production facilities and capabilities, Republic stands as the nation's largest producer of high-performance metals—titanium, stainless, and alloy steels.

Let us help you find the most advantageous use of these metals in your project. Return the coupon for complete information without obligation. Please indicate if you would like a Republic Metallurgical Specialist to call.

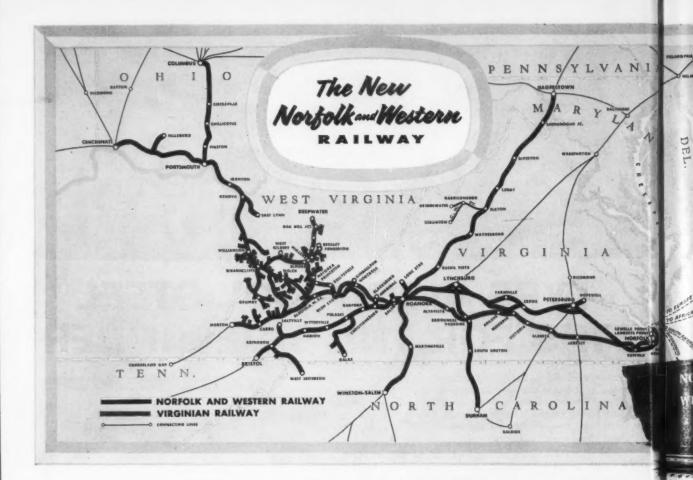


TYPE 4130

STEEL

Stainless Steel, and Alloy Steel

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Have a metallurgist call: Alloy Steel HS6460 Metal Powder Stainless Steel Titanium	Send more information on Alloy Steel HS6460 Metal Powder Stainless Steel Titanium
Name	Title
Company	
Address	
City	Zone_State



this is today's Norfolk

The first merger of two major, independently operated railroads in modern times is a reality. The historic merger of the Virginian Railway into the Norfolk and Western Railway has been approved by the Interstate Commerce Commission.

The bigger, stronger and more efficient Norfolk and Western has two principal objectives. First, the railroad will provide faster and continuously improved service to industry and business along its lines and throughout the nation. Second, it will make available to industry a number of choice new plant sites. The territory of these sites will offer industry an abundance of low-cost power, ample industrial water, huge supplies of superior, all-purpose Bituminous coal, high quality limestone and a great variety of other raw materials; nearness to the big consuming markets of the Southeast, Middle West and North, and overseas markets

through the modern ice-free Port of Norfolk on famed Hampton Roads, plus stable, home-rooted manpower, reasonable taxes and communities that are friendly to industry. With an enlarged and strengthened industrial development department, the railroad will go all out to attract new industries to the expanded territory of the six progressive states it serves.

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The merger of the two railroads makes the Norfolk and Western one of the financially strongest and most efficiently operated trunk lines in the United States, with excellent connections to the four points of the compass. This strategically located rail system has 2,747 miles of road, 5,870



Two Great Railroads to Become One



and Western ... On the Go!

miles of track . . . nearly a billion dollars in assets . . . 81,000 freight cars — more freight cars per mile of line than any other railroad in the United States 250 miles or more in length . . . the nation's newest and most modern fleet of diesel locomotives . . . up-to-date signalling and communications systems . . . huge Tidewater terminals and many other top-notch facilities.

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gically , 5,870 Physical consummation of the two railroads with extensive improvements will get underway as soon as possible. The Norfolk and Western looks forward eagerly to taking full advantage of the bright opportunities in the dynamic years ahead.

Statement by Stuart T. Saunders, N&W President:

"The Interstate Commerce Commission's approval of the merger is a landmark decision which signals a new day in the progress and development of greater efficiency and better service by the combined railroads. It reflects a farsighted viewpoint on the part of the Commission and a sympathetic interest in solving one of the major problems which confront the railroad industry today — the elimination of duplicating and unneeded transportation facilities and services. The Norfolk and Western expresses sincere appreciation to those progressive industries and individuals, civic groups and other organizations whose wholehearted endorsement helped to make this historic merger possible. It is an invigorating challenge, and opens a new era for the new system. The bigger, stronger and more efficient Norfolk and Western is on the go. The railroad has the facilities, the know-how, the determination and vigor to meet the challenge — to do the job."

and Western Railway





EASTERN TIPS THE SCALE IN YOUR FAVOR

A ton of Eastern stainless steel sheet weighs the usual 2,000 pounds. But Eastern's precision rolling, by keeping the gauge toward the light side of recognized tolerances, delivers more square feet of stainless per ton.

Since you buy by the pound and sell by the square foot, that means more dollars per ton . . . in your favor!

Lighten your costs with Eastern's precision rolled stainless.

OFFICIAL TOLERANCE RANGE

HEAVY LIMIT

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EASTERN STAINLESS STEEL CORPORATION . BALTIMORE 3, MARYLAND



This is the largest installation of soaking pits ever built at one time. It will heat an average of 750 tons of ingots per hour. At peak capacity, it will fill the ingot buggies at a rate of 1200 tons per hour.

Worldwide engineering and manufacturing facilities through associates in Australia • Belgium • France • Germany • Great Britain • Italy • Japan



■ Forty-eight soaking pits on one order. There's a bold act of customer confidence for you! Confidence in the future, for one thing. Confidence in the principle of the Surface one-way fired soaking pit with the jet pump recuperator system.

Many other steelmakers have shown similar faith in Surface—a source of pride, matched by our determination to deserve it, wherever heat is used in industry

SURFACE COMBUSTION CORPORATION

2402 Dorr Street, Toledo 1, Ohio



Mobilplex

The Multi-Service Grease with unique Calcium EP Complex. Never before in a single lubricant such a wide range of use...such a margin of superiority...such a potential for maintenance savings!

Outstanding resistance to the washing action of water and emulsions is one of the many important properties of Mobil's new Multi-Service Grease—Mobilplex EP. In your steel mill you'll find it ideal for work-roll bearings and hot mill run-out-table bearings. Mobilplex EP also offers good pumpability at low temperatures, low feed rates, outstanding resistance to heat in the range of 300 F, extra protection against wear and rust. It is a singularly tenacious and adhesive lubricant.

This multi-service grease has outstanding oxidation resistance as well as excellent storage and structural stability. These qualities, plus the great versatility of Mobilplex EP, make it useful throughout the steel mill.

Mill operators in every section of the country are finding Mobilplex EP extremely effective in extending bearing life and protecting production schedules. In addition, they're saving more than with ordinary multi-purpose greases because Mobilplex EP makes it possible to reduce application frequency, simplify storage and handling procedures.

Contact your Mobil representative for full details. He can show you results of laboratory performance tests of Mobilplex EP and five competitive extreme-pressure greases. You'll see why Mobilplex EP is rated tops!

MULTI-SERVICE ABILITY OF MOBILPLEX EP

ANTI-FRICTION BEARINGS (horizontal and vertical). Temperatures in the range of 300 F. Heavy or shock loads. Water contamination. Speeds—low, normal, high.

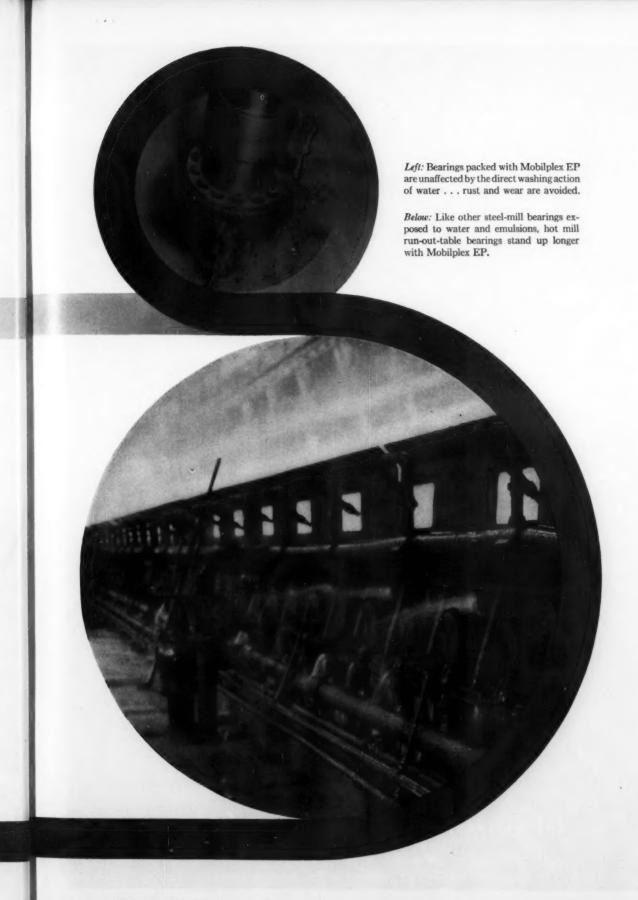
PLAIN BEARINGS All normal mechanical and operating conditions. Temperatures in the range of 300 F. Waterwash. Heavy or shock loads.

DISPENSING AND APPLICATION DEVICES

Transfer pumps. Hand and power guns (long lines) Central greasing systems.



Proved Petroleum Products... Available with a Mobil Program of Correct Lubrication



COLD HEADING MACHINERY

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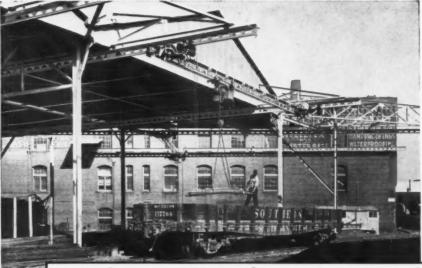


Crucible stainless highlights the quality in your product

This is because Crucible precision-rolls stainless to produce finishes of incomparable lustre. Not only that, Crucible methodically checks each heat to ensure uniform physical properties and accurately controls gauge with electronic measuring devices. For stainless in all gauges down to .010" and in all strip widths, call or write: Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.

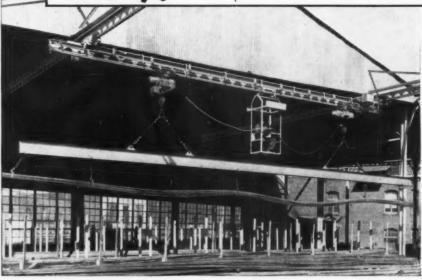
CRUCIBLE STEEL COMPANY OF AMERICA

CANADIAN DISTRIBUTOR - RAILWAY AND POWER ENGINEERING CORP., LTD.



Unloading bundles of rod with a Cleveland Tramrail transfer crane arranged for push-button floor control. This crane may be interlocked with the track system serving various sections of the shop, enabling the load being delivered directly to point of use with the Tramrail hoist carrier without need of any in-between handling.

Rod Forming Plant Cuts Production Time Reduces Costs Tremendously with Cleveland Tramrail System



Here the same crane is shown with an operator's cab and second hoist carrier. The hoists support a lifting beam which will handle bundles of rod up to 60'-0" long. Note the runway extensions that permit spotting the crane directly over a gondola car.

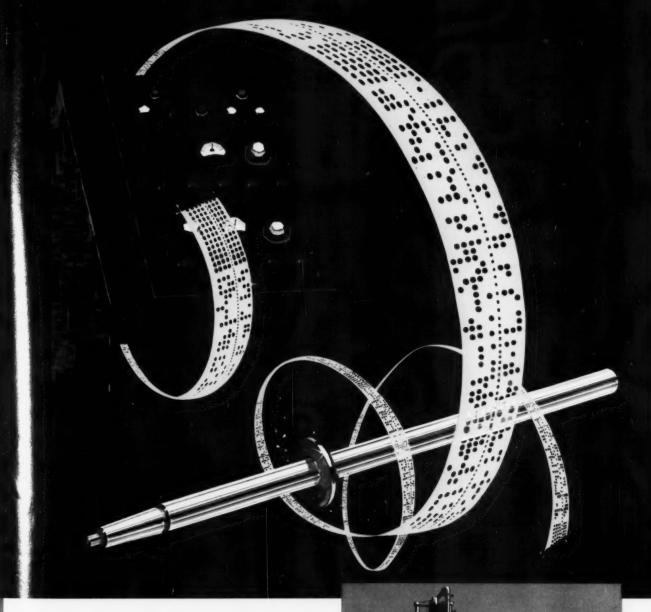
THERE is no comparison between a shop Leguipped with Cleveland Tramrail handling equipment and one using hand methods," said an executive of the Southern GF Co., Atlanta, Georgia.

He should know, because this prominent company has cut production costs in half in the cutting and forming of steel rod for concrete work. Savings are made with the tramrail starting with unloading of incoming steel and through the various steps of manufacture. For instance, only 10 man-hours are now required to unload a railroad car as compared to 45 formerly required.

The Cleveland Tramrail at Southern GF has been designed to provide the utmost in flexibility of handling. It consists of transfer cranes and a track and switch system. The crane used for car unloading can be arranged for floor control or cab control. The latter arrangement is used when 60-foot long bundles of rod are handled by two widely spaced hoists, the cab being located at the center of the bridge.

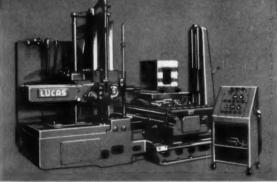
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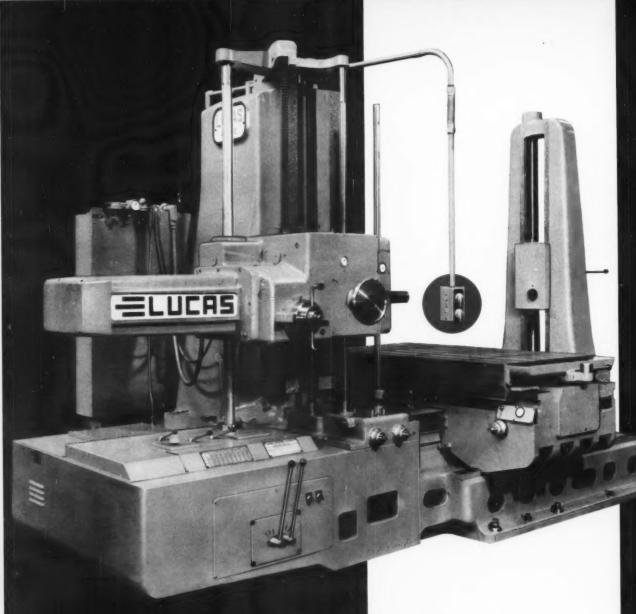


Tape control... certainly!

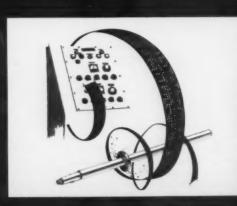
Tape control can readily be applied to any Lucas model, (2 3/4" to 6" diameter spindles) if repetitive operations or complicated one-of-a-kind jobs make this new development advantageous. Lucas tape controlled machines are available with punched tape for N.P.C., magnetic tape for contouring, or tape and tracer control. If you have a profitable use for any type or size of horizontal boring, drilling and milling machine (up to 6" spindle capacity) you can get it at its best from the specialist in this type of machine. Did you ever meet a man who regretted picking a Lucas?



LUCAS OF CLEVELAND

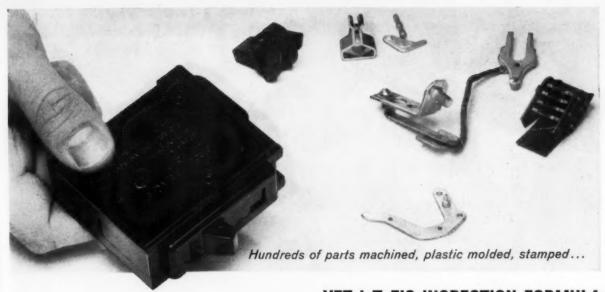


Small fed pent ant controls ...



A Lucas performs the greatest variety of operations possible in any machine tool. Standard models permit control of all operations from the pendant. Optional pendant and lever control machines, like the one shown above, combine a simplified pendant with readily accessible levers. Whichever type of control you want—pendant, lever, tape, tracer or any of these in combination—Lucas has it.

LUCAS OF CLEVELAND



YET I-T-E'S INSPECTION FORMULA GUARANTEES PRECISION AS PRODUCTION RATES MULTIPLY!



Optical gaging inspects these tiny circuit breaker parts, in some cases seven times faster than hand methods. Permits more thorough, often more accurate, inspection of linear dimensions, hole diameters and locations, radii, angles and contours.

"We've found a practical method to retain precise quality in the many small parts we make to go into our circuit breakers," says the Small Air Circuit Breaker Division of I-T-E, in Philadelphia.

"That method makes *full* use of optical gaging with our Kodak Contour Projectors. They're in constant use to improve our quality and avoid production headaches at the same time.

"Starting in *receiving*, all components from our suppliers are optically checked to save later production snags. Tool and die samples and experimental parts in the *tool room* are optically checked. And finally, we inspect parts right in the *production* line. This way, inspection bottlenecks just don't happen."

Here are just a few reasons why I-T-E and other firms find inspection with a Kodak Contour Projector fast and accurate:

Parts and fixtures are easy to set up, even large parts. You have a constant 8" of working space regardless of magnification.

You can easily see and check what you're inspecting because there's brilliant, uniform illumination over the entire screen area, and the image is always erect and unreversed—at any magnification you select.

To learn more about these and other features of the Kodak Contour Projector and how they can ease your inspection problems, write for the booklet, "Kodak Contour Projectors."

Special Product Sales

EASTMAN KODAK COMPANY, Rochester 4, N. Y.

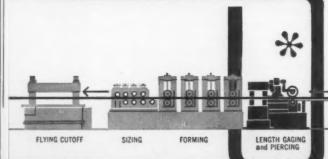
the KODAK CONTOUR PROJECTOR

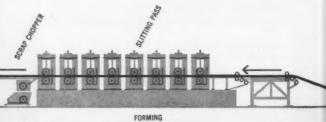
Kodak

10,001

Heart of the new McKay Electronic Cold Roll Forming Line is the measuring section featured above. It can be operated by command information manually dialed into the electronic control or automatically with punched cards.

(Patent applied for)





The line illustrated above was recently purchased by a large building products manufacturer for high speed production of roof and floor deck.

different lengths...

...WITHOUT A MANUAL ADJUSTMENT

he

McKAY'S ELECTRONIC LENGTH GAGE

has a memory permitting instantaneous changes in cut lengths and scheduled quantities as well as precise control of notch and punch spacing on each length.

A transistorized electronic control reads and stores information from punched cards and utilizes an electronic counter to trigger a punching and notching press

at precise intervals as commanded by the coded data on the punched cards.

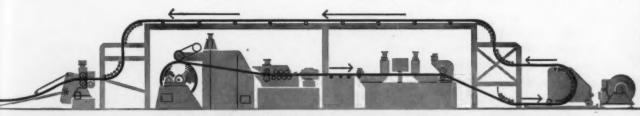
Now! the planning department can schedule the output of a forming or cut-up line without waiting to group identical lengths.

Now! down time previously required for manual length gage adjustment is converted to productive time.

Now! in addition to length control, precise spacing of notches and punches can be controlled and changed by commands received from coded information on the standard data processing card.

BE SURE TO GET THE FULL STORY ON McKAY'S ELECTRONIC GAGE FOR YOUR PRODUCTION LINES.

Call or write the McKay Machine Company, Youngstown 10, Ohio.

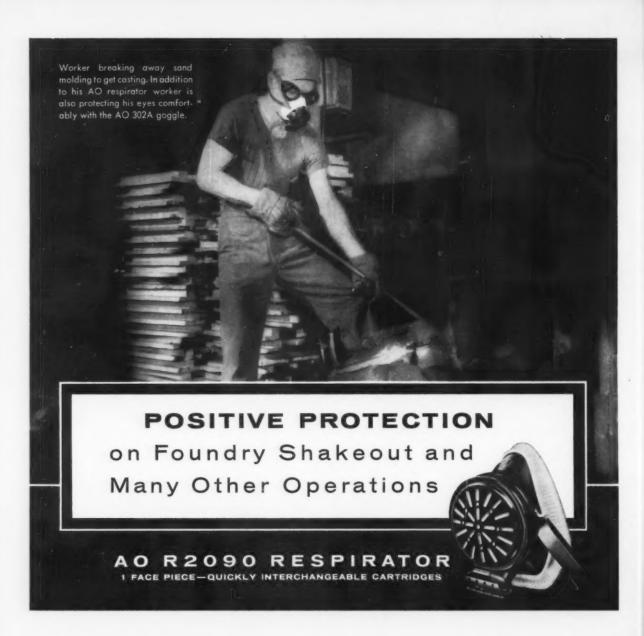


COIL HOLDER COIL PEELER DECOILING LEVELER

STRIP WELDER

LOOPER





Here's Bureau of Mines approved respiratory protection for all dusts not significantly more toxic than lead, pneumoconiosis-producing mists and chromic acid mists. The AO R2090 Respirator can be easily converted to any of eight other respirators. The retainer shell accommodates five chemical cartridges, three reusable dust filters and the R90 "Red Devil" filter.

The R2090 has extremely high filtering efficiency and the built-in pre-filter assures very long service life. The revolutionary variable density filter is compact and lightweight—3" in dia., 1/5" thick, weight only 1/300 of an oz. Your nearest AO Safety Products Representative can supply you. Or write for new bulletin S-9034 describing the AO R-2000 series, respirators, cartridges, filters.

American Optical

COMPANY
SAFETY PRODUCTS DIVISION
SOUTHBRIDGE, MASSACHUSETTS

Safety Service Centers in Principal Cities

Photo courtesy of Draper Corp., Hopedale, Mass.

Always insist on Trademarked lenses and frames

KEYSTONE and [Clow Strong

working together for 30 years to maintain wire rope leadership—

For more than three decades, Keystone has worked closely with Broderick & Bascom Rope Co., St. Louis, Mo., to produce superior quality wire that meets the ever-changing demands of the wire rope industry.

A good example is the large 3%" Yellow Strand "Powersteel" Dragline Rope with a breaking strength of 448 tons. This strong, abrasion-resistant, high-carbon steel wire rope was developed to match the increased capacity, power and speed of today's giant draglines and strip mining equipment.

Sharply contrasting to the big rope is the 1/32", 1 x 7 Galvanized Aircraft Strand—also illustrated—one of the smallest B & B wire ropes.

Keystone and B & B engineers together have developed unusual manufacturing methods to produce a wire rope with superior performance.

You, too, can enjoy these sales advantages and create customer demand by specifying Keystone Wire wherever wire is used in your products. Call your Keystone representative!

Keystone Steel & Wire Company, Peoria 7, Illinois

The large wire rope consists of 295 individual wires, laid up into 6 strands of 41 wires each with Independent Wire Rope Core. The small, galvanized aircraft strand is made up of 7 wires.







THE OTHER TURN



The benefits steelmakers obtain from our refractories are in part a result of Basic's on-the-job servicing. One of the rewards of this close relationship has been the opportunity to observe and appreciate the lighter side of these usually serious craftsmen.

Magnefer and Syndolag Set Fast - Stay Fast

BASIC IL CORPORATED

DRPORATED 845 HANNA BUILDING . CLEVELAND 15, OHIO

- THE BAD NEWS ON STEEL LOSSES in the third quarter tells only half of
 the story. The strike already has set back some capital spending by the industry. But what is really important is that some
 companies are forced to re-appraise their entire capital
 spending programs.
- APPLIANCE MAKERS ARE ALREADY TALKING ABOUT quotas for distributors.

 Record sales have cut inventories and steel shortages threaten production. After Dec. 1, a general pinch at the retail level will be felt. It could continue through the first quarter of 1960.
- SHORTAGES OF AUTOS ARE BECOMING commonplace. Passenger cars are the first of the major consumer products to be seriously hit by the steel strike. Many GM dealers are already out of the market and others will feel the pinch soon.
- TRUCKMAKERS ARE LOOKING FORWARD to their second biggest year in history.

 Sales are expected to climb over the million mark in 1960.

 Two principal reasons: The healthy economy and the wide variety of styles and functions offered in the new lines.
- MACHINE TOOL ORDERS REBOUNDED in September, in spite of forecasts of doldrums until the steel strike is settled. Net new orders of metal cutting tools in September rose to \$48.85 million, compared with \$42.25 million in August. Nine months totals for metalcutting and forming tools: For 1959, \$480.5 million, compared with \$375.85 million in the same period of 1958.
- JUST WHEN THE FEDERAL HIGHWAY PROGRAM was supposed to be really going, it looks like disappointments are ahead. Actual construction in 1960 will probably be 15 to 20 pct behind this year. Even worse, it looks like the 1961 figures will drop about the same percentage behind 1960.
- PRESTRESSED CONCRETE CONSTRUCTION advocates are expecting another big boost similar to that enjoyed during Korea. They expect strike-induced structural shortages to result in another big prestressed demand.
- TIGHT MONEY WILL HURT INDUSTRIAL construction. The National Assn. of
 Real Estate Boards indicates in a new survey that lenders are
 receptive only to prime quality property held by borrowers
 with top credit ratings. And interest rates are going up even
 for them.



BRIDGEPORT BRASS STRIP...



Peterson Manufacturing Company, Kansas City, produces the auto accessories shown here.

STOPS Rising Production Costs of Vital Automotive Accessories

Spotlights, stop lights, reflectors and a host of vital auto accessories are most economically produced from Bridgeport Cartridge Brass Strip (Alloy 69). The ease with which Alloy 69 can be formed is the key to the cost savings. In fact, Cartridge Brass has replaced stainless steel in many of these applications.

Superior deep-drawing properties in Cartridge Brass make it possible to reduce the number of forming operations to a minimum. Rejects are also eliminated, for Alloy 69 has the ductility and strength to take progressive forming operations without rupture or cracking. And the finish remains fine during processing — fine for the chrome plating needed to give auto lamps reflective brilliance. The added plus of high

scrap value for brass gives manufacturers a final dollarsand-cents reason to lower manufacturing costs by forming parts from a forming material—Cartridge Brass Strip.

Lamps are not the only products that save from the formability of Cartridge Brass Strip. Grillwork and grommets, snap fasteners and spun products, eyelet machine items and every progressively formed product can enjoy

minimum unit costs with this one-of-ahundred Bridgeport Metals. For a complete list, and mechanical-physical properties comparison, write today for a copy of the folder, "Bridgeport Alloys, Copper, Brass, Bronze." Please address Dept. 3411.





BRIDGEPORT BRASS COMPANY

Bridgeport 2, Conn. • Sales Offices in Principal Cities
Specialists in Metals from Aluminum to Zirconium



FIRST TO GO: A trickle of steel flows into West Coast market after Kaiser Steel, above, goes back to work.

Headaches Ahead for Steel Users Long After Strike Ends

The real story of the steel market is just beginning to unfold. Tough days are ahead for users.

Mills and the union, for their own political reasons, have softpedaled the extent of coming shortages.—By Tom Campbell.

For four weeks, at least, it has been academic to steel users how soon steelworkers got back to work. The damage has been done. And it will be felt for at least the next six months.

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Soft pedaling of the steel shortages more than a month ago was a mistake. Most steel users either did not know how bad things were or they were under the mistaken idea they were helping the steel firms by keeping quiet. This made it harder to prove a crisis to Federal judges in the Taft-Hartley injunction.

Back to Washington—This was the situation as steel talks moved to Washington this week after they collapsed earlier in Pittsburgh.

But this time in Washington, real pressure is expected to hit both sides. It will come from the White House, but through Federal Mediation chief Joseph F. Finnegan.

Economy Hit — While management and labor have jockeyed for positions in the past month, the nation's economy was in the process of being hit with the most chaotic impact in modern industrial history.

In the beginning, the steel companies had little to say about huge steel stocks. They had been built up because consumers knew the battle was a royal one. But even the most pessimistic observer hardly expected the steel strike to last beyond Sept. 15.

Union Strategy—The union, in the early stages of the shortage crisis a month ago, adopted the earlier attitude of both steel management and customers—that there was no harm to the economy and that there would be enough steel.

This union strategy was to drain off all the steel in the country and thus have a weapon to try to bring the steel industry to its knees. That was the grand strategy behind the delays in the courts. And it served its purpose. This week the real truth on steel supplies is dawning on people who should have known better. This includes users, makers, government, and union people.

Pressure Mounts — While some steel officials claim there has been no pressure on them by steel users to "settle" the strike, that is a legal loophole. There has been intense pressure from auto companies and others for weeks on end. At least

How to Fight the Steel Pinch Eight Rules for Post-Strike Period

1. Keep On Your Supplier's Back

no matter what he says. Remind him of your purchasing history.

2. Order Properly

ahead and see that it is recorded.

3. Set Up Plans

for substitute sizes, grades, and types of steel. Ask your supplier for help on this.

4. Don't Start Operations

until you are sure of a steady supply.

5. Try New Suppliers

(You never can tell.)

6. Watch the Daisy-Chain buys.

A few might help even though small tonnage costs a lot. It will be diluted by the greater amount of mill price steel. "For want of a nail...."

7. Try the Warehouses

that are opened up after the strike.

8. Keep Plugging

if you expect to get your share of the thin supply in the months ahead. Others will.

pressure to see if something could be done.

This week steel customers have not yet been told by their suppliers how bad things are. Nor have they been told that the optimistic schedule estimates are really based on no experience at all. There has never been such a strike, thus, there are no sure-fire estimates.

Timetable—The best that customers on the average can expect is to see the steel industry at 80 percent of ingot capacity within 10 days to two weeks after a full startup; at 95 percent in 4 to 5 weeks. Since steel users do not use ingots, that means little or nothing to them.

Most steel companies had little

steel in the "pipe lines" when the mills went down. Nor did they have any great supplies of raw materials such as iron ore, limestone, coke, coal, refractory bricks and other materials. These had all been used up in the rush to get everything out of the mills before the shutdown.

Shipment Schedule—Thus, it will be at least a month after startup before there is a steady flow of finished steel from the mills. Some mills will do better but others will take longer. Damage to furnaces, mills, and property has not been assessed nor can it be estimated for weeks—or months.

Before most steel mills will be shipping a balanced flow of steel products, more than 5 to 7 weeks will have elapsed since the first day back for the men.

Examples—One example will be enough to glimpse an image of what will be the most confused and messed-up market period in steel history: Hot sheet mills must furnish stock for cold-rolled sheets, hot-rolled sheets, galvanized sheets, annealed and pickled sheets, tinplate, electrical sheets, light plate and coils for strip. Imagine, if you can, how each user will be given his "just desserts."

Or if that is too much to figure out, take this one: The strongest demand is for cold-rolled sheets, galvanized sheets, tinplate, etc., so the sheet manager cries for most of the steel in a given mill. What happens to pipe, structurals, bars and other items which require huge amounts of steel from the blooming or slabbing mills? It will take Solomon in all his glory to approach wisdom here.

Some Indicators — Obviously, steel companies are not going to broadcast this information. But the signs are there for all to see—if they have had any experience at all with steel distribution over the past 23 years.

A. B. Homer, president of Bethlehem Steel Corp., last week came closer than any industry spokesman to date in indicating the true state of the market.

He pointed to \$1,152,000,000 (including \$393 million for ship-building) in orders on hand. This, he said, was the largest total of orders ever booked by the second largest steel producer.

Delivery Hopes—Delivery of finished steel products will depend on the product, but he said it would be a month to a month-and-a-half before the mills reached capacity shipments.

Delivery dates at Bethlehem are extended from five to six months on some products. Another spokesman added that the minimum booking for any Bethlehem bar mill is eleven weeks.

How Strike Hit Steel's Finances

Losses Could Mean Cutbacks in Capital Spending

For some companies, third quarter losses are the first since the 1930's.

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Capital spending programs are delayed, future programs studied.—By R. D. Raddant.

The bad news is out. Quarterly reports from the steel companies show how much the steel strike cut into the industry's earnings.

Some bold spokesmen hope that if the strike ends soon, their companies might earn their dividends this year. Most of the major companies, in fact, showed profits for the first nine months.

First Half Helped—This is because of the record shipments in the first two quarters when steel users built up stocks in advance of the impending strike.

For Inland Steel Co., it is the first quarterly loss since 1934. For Bethlehem Steel Corp., it is the first quarterly loss since 1935 and the first sizable one ever. For U. S. Steel Co., it is the first quarterly loss since 1938 and the largest in the company's history.

\$500 Million Invested — If the losses are added up (see table), and profits that might have accrued had there not been a strike taken into consideration, the result bears out the industry's contention that it has \$500 million invested in the strike.

There are deep scars in addition to the quarterly losses and lost wages. Probably most significant is that the strike and its financial losses can tie up future and current capital spending plans.

Suppliers Hit—Steel mills had to halt installation and modernization of equipment during the strike. And suppliers of steelmaking equipment also were hard hit in the third quarter by the long strike.

Of greater concern, however, is whether losses will result in postponing or cancelling long-range spending programs.

Re-appraisals — Says one steel company source: "There's no question about it, it calls for a re-appraisal of our programs." Another conceded that the big losses could push his company's program back by a year.

A U. S. Steel spokesman points out that the company has authorized a program of \$630 million. This will go forward on schedule after the end of the strike, he says, but concedes that, depending on total loss, some future programs that have not yet been authorized might conceivably be delayed.

Some Delays — But other programs have been pushed back, if only by limitation of the strike. Jones & Laughlin Steel Corp., for example, had intended to spend \$65 this year. It now estimates it will spend \$45 million.

Depends on Settlement — But there is another angle, hinging on the notorious 2-B clause and other work practices that are now critical strike issues.

It's known that these practices prevent utilizing new equipment to full efficiency. This, in effect, deters some spending for cost-cutting equipment.

It could mean that a victory by the steel side on these issues could touch off a major spending boom for new, and more efficient, steelmaking equipment.

Steel Earnings-1959 vs. 1958

	Third	Third
	Quarter	Quarter
COMPANY	1959	1958
U. S. Steel	\$31,135,136*	\$74,922,924
Bethlehem	38,926,913*	26,240,677
Republic	24,861,406*	15,184,641
Jones & Laughlin	16,465,000*	6,698,000
National	2,821,600	10,892,433
Youngstown Sheet & Tube	7,149,660*	3,641,906
Armeo	8,852,896	12,876,598
Inland	7,449,109*	12,118,009
Wheeling	4,263,000*	1,842,000
McLouth	3,183,566*	2,766,781
Detroit	2,120,414	306,533
Crucible	2,034,090*	854,374
Pittsburgh	4,105,001°	291,6381
Granite City	3,248,008	2,323,977
Allegheny Ludlum	3,913,320*	1,155,429
Alan Wood	985,440	538,650
Copperweld	684,775	898,028
Continental	1,057,379	1,021,236
Eastern Stainless Steel	713,130	753,449
Lukens	26,355	479,982
* Indicates loss		
* Indicates loss.		

Strike Deals Body Blow to LIFO

Many Users Can't Rebuild Stocks By Tax Time

Because the strike has wiped out inventories, warehouses and others using LIFO face problems.

Some hope to obtain relief by changing tax period, others buy imports or take title to foreign supplies.—By T. M. Rohan.

Steel service centers and other distribution-type plants face a kingsize tax headache because of the lengthy steel shutdown.

Those companies using a LIFO (last in, first out) accounting system for federal income tax purposes will pay substantial extra sums of tax money this year. Reason: They can't rebuild inventories back to the base amounts used in tax reporting by the end of 1959.

How It Works—Others with the same problem include steel fabricators, non-integrated cold finished bar producers, steel mills, pipe mills, and manufacturing plants. All those, in fact, where LIFO inventories are a major part of total taxable assets.

Basically LIFO is an optional type of corporate income tax accounting. Under the system, a given quantity of inventory is valued at the original purchase price. (This is worked out on stock on hand at the start of the fiscal year when LIFO is applied.)

Carry or Pay — The inventory may be carried at the original purchase price for tax purposes at the end of the year—if the total is at the same level. If the quantity falls below the original amount, the part re-ordered must be carried at the new purchase price.

Thus some steel warehouses who first went into LIFO before World

War II have been able to carry steel at \$80 ton for tax purposes. It would cost them about \$140-\$150 ton to replace it now.

(To the extent opening inventory was reduced at the close of the year, tax would apply to the difference between cost and LIFO evaluation.)

"Tax Catastrophe"—The system was originally put in to eliminate taxing money sunk into inventories bought when prices were rising. It serves as a tax deferment when steel prices increase. And it also has a stabilizing effect on steel inventories.

Right now with steel supplies almost wiped out and the industry gripped by a strike, it's virtually impossible to get inventories up to LIFO limits. A leading tax advisory service calls the problem "an absolute tax catastrophe."

Double Squeeze—About 40 pct of all steel service centers use the LIFO method of evaluating inventories, according to the American Steel Warehouse Assn. Many of these close their accounts in the next few months. For most there will be sizable "paper profits" on which taxes will have to be paid. These will drain away some of the cash badly needed to replace inventories.

Unless some action can be taken many companies may be forced to operate for months with reduced steel stocks. This will limit their service to customers.

"We stand to lose \$110,000 unless we can come up with some answer to this problem," says one leading Cleveland warehouseman. "Our inventories were at their highest mark in history just before the strike so we could carry our customers through. Now there's less than a third of it left. qu

"We don't expect any new steel for at least several months. The most optimistic forecast is that we may get 1000 tons by the end of the year out of the 8000 we have been able to put on the mill books. This will amount to less than half our LIFO base. We're going to review the whole LIFO problem when our fiscal year comes around and see what we can do."

Time for a Change?—Another warehouse is checking into the possibility of changing its fiscal year to soften the blow.

"Although our sales this year will be the best in many years, we stand in danger of losing most of our profit if we get hit with this LIFO," the president says. "We're just about cleaned out and there's no hope of building up our stocks to the LIFO base quantity. So, we're checking into changing our fiscal year."

Another warehouse has already changed its fiscal year and thereby cut its extra taxes by several hundred thousand dollars.

"Our inventory base was about \$3 million and we would lose 75 pct of it," says the president. "By changing our fiscal year we hope to lose only \$1 million of the base. There is no hope of rebuilding inventories by the end of the year. This LIFO is a very common problem and unless there is some relief measure, some smaller companies may go under on account of it."

Some Remedies—What can be done about the problem? As noted, many companies are trying to obtain relief by changing their ac-

counting period. Others are buying imported steel or taking title to steel still in foreign locations.

The American Steel Warehouse Assn. in Cleveland has moved into the problem with a fact finding study. Dozens of members have queried headquarters for advice.

The Assn. recommends all members using LIFO consult the best available professional advisors. Assn. officials are also hopeful some relief can be granted by the government. Action similar to that taken during the Korean War period would be helpful.

During World War II and the Korean War, when inventories were wiped out by defense requirements, some tax relief was given because warehouses could not rebuild stocks. But the present situation would be the first resulting from economic conditions and would set a precedent. Observers feel legislative action offers the only completely adequate relief.

How to Change — Companies wanting to change the accounting period operate under these rules:

The easiest way is to change the accounting period to end as far back in 1959 as possible. The earliest period which can be used now without Revenue Service consent is Aug. 31. Otherwise Sept. 30 is the earliest date. Other possibilities are to defer income, or secure title to existing, but undelivered, steel such as in a foreign country.

The accounting change can be made without approval on four conditions: That the accounting period hasn't been changed in the last 10 years, the short tax year is at least 80 pct of the preceding year's tax, there are no operating losses in the short year, and the company has the same special status.

If these conditions are met, the tax return should be filed by the 15th day of the third month after the cut-off date. Otherwise a Form 1128 must be filed.

Some warehouse sources believe a better solution would be changes in the law to counteract situations such as the one now caused by the strike.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

How LIFO Takes Big Tax Bite

I When LIFO Inventory Is Maintained

Sales		\$10,000,000	Sales	50,000 tons @ \$200
Cost of sales:			Opening Inventory	10,000 tons @ \$100
Opening LIFO Inventory			Purchases	50,000 tons @ \$150
Purchases	7,500,000			60,000 tons
	\$8,500,000		Closing Inventory Sold @	
Closing LIFO Inventory	1,000,000	7,500,000	of \$150 per ton	(10,000 tons)@ \$100
Gross Profit		\$ 2,500,000		50,000 tons
Expenses		2,000,000		
Net Profit		\$ 500,000		
Federal Income Tax		\$ 254,500		

II When LIFO Inventory Is Cut 75 Pct

Sales		\$10,000,000	Sales	50,000 tons @ \$200
Cost of Sales:			Opening Inventory	10,000 tons @ \$100
Opening LIFO Inventory	\$1,000,000		Purchases	42,500 tons @ \$150
Purchases	6,375,000			52,500 tons
	\$7,375,000		Closing Inventory	2,500 tons @ \$100
Closing LIFO Inventory	250,000	7,125,000	Sold @ reportable cost of	
Gross Profit		\$ 2,875,000	\$142.50	50,000 tons
Expenses		2,000,000		
Net Profit		\$ 875,000		
		-		

\$ 449,500

Federal Income Tax

NTDMA Looks at Its Problems

Like most industries, contract tool and die shops have a long list of problems.

Some of them are embarrassing, but the industry's trade association is meeting them headon.

A year ago the contract tool and die industry, on the skids since early 1957, hit a hard and bumpy recession bottom. Goods and services sold fell from \$1.4 billion to \$940 million from 1957 to 1958.

Even for a traditionally feast-orfamine industry the economic hole was a deep one.

Foreign competition, captive shops, too many contract shops, unions: They all came in for their share of the blame.

Pressing Problems—Long as this list of problems is, they aren't the main problems of the contract tool

and die industry, according to Jack Kleinoder.

Mr. Kleinoder, general manager of Volkert Stampings, Inc., Queens Village, L. I., has been president of the National Tool and Die Manufacturers Assn. for the past year. His term expires this week with the end of the annual meeting being held in New York City from Nov. 4 to 8.

Technicians or Managers?—"The success of a business," he says, "depends on our ability to manage." He points out that most managers and owners of tool and die shops have come up through the ranks.

"They're good technicians—but they don't know how to manage," he notes. "And that's one of the biggest problems faced by our industry today. We need better management skills."

Why Shops Fail — Many small contract tool and die shops have

gone out of business in the past few years, he concedes, and others are still going out of business. But the fault lies more with management than with competitive factors, he believes.

"We get complaints from coast to coast and border to border that business is bad. But when business is bad, they don't know what to do about it," Mr. Kleinoder claims. "At a time when managers should be their busiest, they aren't prepared to weather the storm."

Assistance Program—To remedy the situation the executive committee of NTDMA is studying the advisability of holding a series management education seminars to point out good management techniques.

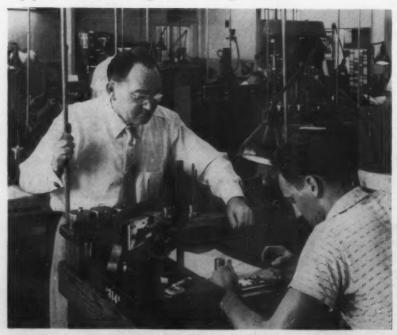
Contract tool and die shops have another problem just as important to the future of the industry as upgrading management techniques. The entire industry—both contract and captive shops—isn't training enough journeymen to meet its present or future needs. Nor are they being trained to high enough skills, according to Mr. Kleinoder.

Apprentice Shortage — NTDMA has backed an intensive program since 1952 to boost apprentice training. The association estimates that the industry needs to train about 8000 apprentices each year.

Yet a survey by the Bureau of Apprenticeship and Training, U. S. Dept. of Labor, conducted at the request of NTDMA, shows only 3000 apprentices being trained in 33 metalworking states. Employment in the 2434 companies surveyed totals 119,000, of which 34,000 are skilled workers.

Mr. Kleinoder says that because of the increasing complexity of tooling it requires more and more manhours. And this means more skilled workers will be needed in the future. At the same time, they will have to be better trained than present skilled workers.

Apprentice Programs Lag Needs



LEARNING A TRADE: A young apprentice at Volkert Stampings, Inc., is counseled by Jack Kleinoder, the company's general manager.



Savings with **DENISON** Multipress justify MAPI replacement recommendations at BARBER-COLMAN

... line of 3 new hydraulic presses simplifies and speeds small motor assemblies

Installed upon recommendation of a MAPI replacement analysis, three Denison hydraulic Multipresses are today meeting predicted cost reductions in assembly operations at Barber-Colman Company, Rockford, Illinois.

Operating in a line and connected by conveyor belts, these three hydraulic presses handle-on a semi-automatic basis-such operations as bending, staking, aligning, compressing, riveting and stamping in the production and assembly of small electric motors.

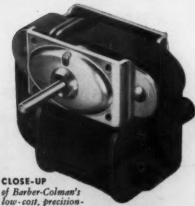
In addition to more efficient handling of production functions, the quality of output is more uniform because exact pressure is duplicated on each stroke of the hydraulic ram.

Savings in cost and uniform production like this can be duplicated in your shop today. A cost reduction study by a Denison Specialist in press work can show you how. Write today for a descriptive catalog on the complete Multipress line.

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of Barber-Colman's low-cost, precision-made, AC non-geared motor... assembled by Denison Multipresses.



Can Appliances Hold Momentum?

Steel Shortage Threatens Record Sales Levels

Appliance makers report they are hitting new sales highs this year.

But there are problems ahead as steel-shortage shutdowns are likely.—By K. W. Bennett.

 Appliances, despite high money costs and sagging output, are smashing through to new sales records.

RCA Whirlpool said, early this week, sales would likely hit \$327.1 million for the first three quarters, compared with \$270 million in the like period last year.

At midweek, Norge called October "a record month, 1959 possibly a record year."

From Maytag, word is the firm has had a record third quarter and a record nine months.

Westinghouse reports record third quarter sales, with consumer products pacing the gains.

Gibson is another record smasher.

Stock Is Moving—Is the consumer buying—or is the dealer boosting manufacturers' sales figures by piling up inventory? Appliance men say stock, particularly washers, are moving. Most dealers agree. Appliance makers use warranty cards as a measure of the amount of goods moving directly to the consumer. And warranty returns indicate that

dealer-distributor inventories of appliances are shrinking.

Shutdowns at General Electric, Admiral, and Westinghouse plants have produced jitters at the dealer level. Kelvinator distributors are already talking of "quotas." With retail sales firm or rising, dealers say December 1 will start a general pinch that will carry through all of the first quarter of 1960.

First Victims — Small dealers, generally, carry not more than one week's inventory. Another three weeks stock is held on order with distributors who feed finished goods into the dealer system. Any appliance shortage will hit them first.

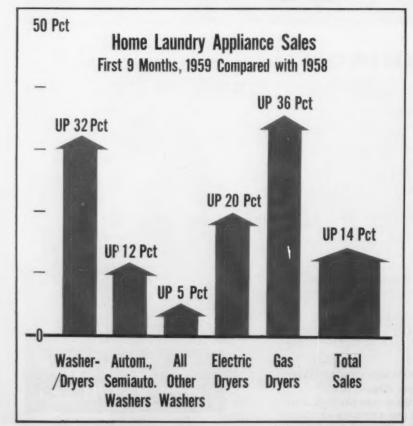
The distributor is in better shape. He has 45-90 days stock. Large dealers, with their own warehouse space, are equally set. But some are firing scattered distress signals. One Midwestern distributor commented, "We're down to about half what we should have, and consumer demand is running strong."

Still Producing — Back at the plant, where the battle for steel is a daily struggle, they're still hammering out mainly washers and some refrigerators. The secret: Divert steel from low-turnover products to hotter items. One appliance builder, who describes October sales as "fantastic," shut down the plant for model changeover one month early. He hopes to keep steel inventories intact until the mills begin at least partial delivery.

Another began cutting production beneath the level of incoming dealer orders as early as September 10.

Like the steel mills, the appliance manufacturer faces startup problems. His vendors are out of steel. His own inventories are out-of-balance. He expects a four to six week lag after mill startup before he'll receive volume shipments of some types of steel.

Washers Are Cleaning Up



Another KING "Defense Production Special"

"Tailor-Made" to Specific MISSILE Requirements ... Yet Retaining All General-Duty Features Recently installed in one of the nation's leading aircraft plants, this specially-built unit is a good example of the wide range of design versatility which is available in KING® Vertical Boring and Turning Machines.

When you buy a custom-designed KING machine, you buy only the accessory equipment, electrical controls, and design modification which your special-work machining operation requires—no more and no less! And always, you have in the basic machine all the standard facilities for general-purpose boring, facing, and turning.

This KING combination of special features and general-purpose facilities makes all the difference in competitive cost-control.

72" KING
Custom-Built
Vertical
Boring and
Turning Machine

194" ONKING HEIGHT UNDER RAIL TEM

AMOULAR PLACEMENT OF SIDE SEAD RAM permits the proper positioning of gelader wheels lost traces contouring and the means for turning and



OTHER SPECIAL FEATURES OF THIS MACHINE

- Swiveling type side head arranged for tracer controlled turning and grinding operations.
- Grinding attachment with multi-speed precision motorized spindle extending through side head ram and arranged to receive interchangeable quilts. Attachment includes balancing type wheel holders and wheel guard with exhaust outlet.
- 3-position tool holder for side head, which can be readily interchanged with grinder quills for turning operations.
- Operator carrier platform attached to side head,
- ✓ Console control system.

- Electronic, two-dimensional (360°) tracer mounted on side head. Template holder arranged to support templates of the type required for work pieces utilizing full capacity of the machine. Universal adjustment is provided for the tracer head.
- ✓ Electronic, two-dimensional (360°) tracer mounted on rail head. Template holder mounted on top of rail to provide maximum work clearance above table. Positioning controls for stylus head for operator convenience.
- Constant surface cutting speed attachment and constant chip thickness controls applied to both tracer heads.
- V Coolant conducted through rail head rams.

For further details on KING machines—standard 30" to 144" designs or special custom-built units—see your authorized KING Distributor, or write to us direct.

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Vertical Boring and Turning Machines

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HIGH STRENGTH AND STABILITY

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WITH GOOD FABRICATION PROPERTIES

AM 350 and AM 355 are metals for the space age! The combination of easy fabrication with high strength-to-weight ratio of AM 350 and AM 355 interests missile and supersonic aircraft designers with problems of high strength at elevated temperatures.

This pair of precipitation hardening stainless steels from Allegheny Ludlum research are easy to fabricate in the annealed condition. They can be spun, drawn, formed, machined, brazed and welded using normal stainless procedures.

Both alloys have high strength without embrittlement from room temperature to 1000°F, plus good ductility at elevated temperatures. They have remarkable stability and excellent corrosion resistance.

AM 350 is available in sheet, strip, foil, small bars and wire. AM 355, best suited for heavier sections, is available in forgings, forging billets, plates, bars, wire, sheet and strip.

For further information, see your A-L sales engineer or write for the new technical booklet, "AM 350 and AM 355," Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.

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Red Pigs Go to U.S. Market



RUSSIAN IRON: At Detroit, a crane unloads Russian iron from a Norwegian vessel, as U. S. supplies of raw iron dwindle due to the steel strike. The Commerce Dept. said Russian iron is being delivered at Buffalo for \$49.25 a ton, including \$1.12 duty. Domestic pig iron sells there at \$66.

Subsidiary Making Fused Refractories

Fused refractories will be made by a newly formed subsidiary of Harbison-Walker Refractories Co., Pittsburgh, and the Carborundum Co., Niagara Falls, N. Y.

The jointly owned (50 pct by each firm) subsidiary has been called Harbison-Carborundum Corp. It will operate a facility recently modernized by Carborundum at Falconer, N. Y. Plans call for new facilities to make fused chromite magnesia refractories at other locations.

Products will include alumina, chromite and zirconia base refractories for the glass industry. Also chromite and magnesia base for the steel industry, and cements and other products for fused refractory applications.

Harbison-Walker is the world's largest producer of refractories. Carborundum is a leading supplier of fused refractories.

In recent years, fused refractories have gained wide acceptance in the glass industry. They have been tested for use in openhearth furnaces, but normal use in the steel industry at present is confined to a limited number of electric furnace applications.

Conventional refractories a r e bonded in a solid state. Fused refractories are melted in an electric furnace and cast or otherwise formed to required shapes. The fusing action makes for low porosity. It produces a brick that is highly resistant to chemical action under severe service conditions.

Magnetite Sources Located in Penna.

Five possible new sources of magnetite are indicated in new magnetometer survey maps of south-eastern Pennsylvania. The maps are now available from the U. S. Geological Survey office or the Pennsylvania Geological Survey Dept.

These 18 maps are the first of a series of 100 resulting from a three year magnetometer survey. It was jointly financed by the state and federal governments.

Two deposits are indicated in Bucks Co., adjacent to the Fairless Works of U. S. Steel Corp.; another in Lehigh Co.; and two in Lancaster Co., close to two magnetite mines of Bethlehem Steel Co.

About six years ago Bethlehem Steel developed its new Grace mine at Morgantown, Pa., on the basis of a company financed magnetometer survey. Bethlehem also owns the Cornwall mine where magnetite has been produced since Colonial days.

Steel Crisis Hurts Missile Programs

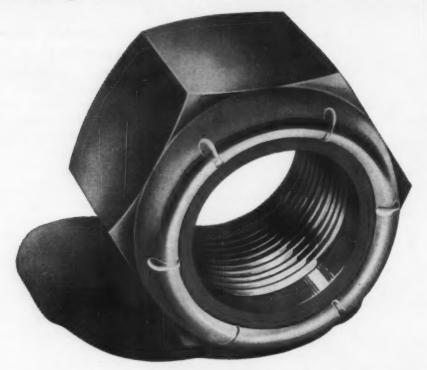
Government missile men are astonished at recent court opinions holding that the lack of steel is not a threat to the nation's defenses. Space boss T. Keith Glennan says a key missile (Vega) has been set back at least three months because of shortages caused by the steel strike.

Vega, a three-stage missile, is designed to thrust a 4000 lb payload into orbit, or to send 1000 lb far into space.

Until the strike set it back, Vega was tagged to be ready early in 1961 for a space shot equal to anything the U.S.S.R. has done.

Meanwhile, Red space scientists continue to improve efficiency of their systems.

How many times can this nut be re-used?



ON ANY BOLT OF STANDARD QUALITY, THE NYLON INSERT ELASTIC STOP® NUT PROVIDES DEPENDABLE LOCKING TORQUE

for over 50 on-off cycles

The remarkable wear resistance of the tough nylon collar plus its elastic recovery characteristic make it possible to remove and re-use the standard Elastic Stop nut at least fifty times. This familiar red collar—an integral part of an Elastic Stop nut—grips the entering bolt threads with a perfect fit which dampens impact loads and resists turning under the most severe conditions of vibration and shock. When the nut must be removed for routine maintenance, the nylon collar tends to resume its original shape and, on re-installation, grips the bolt threads as effectively as on the original installation.

Prove it to yourself! Check the coupon for a copy of Recommended Test Procedure for Determining Re-usability. Re-usability is just one of the advantages of the nylon insert Elastic Stop nut. The constant torque that locks the nut at any position on the bolt: the inertness to gasolines, oils, salt atmospheres, cleaning compounds and common acids: the easy identification on the assembly line or in the field: the one piece construction that simplifies installation and reduces cost—these special features have made the Elastic Stop nut the standard of industry for tough applications.

Elastic Stop nuts are available in thin and regular height hex types in sizes ranging from a watchmaker's 0-80 through 3 inches, also many special shapes to meet your unusual design problems. In standard finishes and materials including carbon and stainless steels, brass, duronze and aluminum.

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Strike Effects Push Inflation

Don't spend time worrying if steel contract settlements will add to inflation.

Because of strike's length and hardship, the inflationary effects are already here — or on the way.

 You can stop wondering if steel wage settlements will add to inflation.

Whether they raise steel prices or not, the answer is already in. The length of the strike and its seriousness have decided the issue. The inflationary pressures are already here—or on the way.

Costly Losses — Debate about whether the settlements are inflationary or non-inflationary is a waste of time. Here's why:

The strike itself is inflationary. Losses in steel production mean scarcity, both of steel and the goods made from it. Scarcity breeds inflation. In addition, profits and wages lost during the shutdown will subtract from post-strike gains.

Consumers will need to pay off strike-caused debts. Lower business profits will affect tax returns to the government.

Expensive Material—Steel shortages put pressure on costs and
prices. Manufacturers, hard-pressed
for steel, are spending more to get
it. Conversion tonnage (semi-finished steel bought at one mill and
rolled at another) is adding to costs.
So are premium prices paid for finished steel products. Even when
mills resume operations, shortages
will exist for months. So will extraordinary methods of getting
steel.

Reduced stocks of consumer

goods also pressure prices. Many assembly lines have either slowed down or closed because of lack of steel. As a result, retail stocks of consumer durables made from steel are thinned out.

In the months ahead, buyers may find a limited selection of appliances and other durables. And discounting will be restricted.

While not pinpointing the steel industry, one economist has told Congress about the dangers of "spill-over wage increases." Dr.

Fritz Machlup, professor at Johns-Hopkins University, warned a Senate-House Economic Committee, "Whenever any group in the economy wants to raise its real earnings faster than the rest of society, there will be other groups who will insist on similar raises.

"Because these claims exceed the increase in total output, they can be satisfied only at the expense of the rest of the people, who will be deprived of parts of their real incomes by means of price inflation."

Consumer Credit Is Rising

 How much consumer credit is enough? At the moment economists differ widely.

There's agreement on only one fact: Right now consumer debt is mounting rapidly; in the last few months—at a faster pace than during the boom of 1955.

Stimulant or Drag? — With the increase has come concern about how much credit is healthy for the economy. When does consumer debt stop being an economic stimulant? And when does it become an economic drag?

Dr. Raymond J. Saulnier, chairman of the President's Council of Economic Advisors, sounds a note of caution. So far, he says, recovery from the recession has been a balanced one, unmarred by outsize expansion in any particular sector. But he wants to avoid "a great new expansion of consumer installment credit similar to the one that lead to the downturn in 1957-1958."

Some Disagreement — Other economists disagree. Rising income will make more people better credit

risks—and heavier credit users, according to Dr. Paul W. McCracken, former member of the President's economic advisory board.

He adds, "There is a fairly widespread image of consumer borrowing as something gulping down huge amounts of our scarce savings, starving out other borrowers, and destabilizing our whole economy."

The facts don't support this image, he maintains. "Even in the extreme year of 1955, the expansion of consumer credit was only 10.6 pct of the year's total increase in private and public debt.

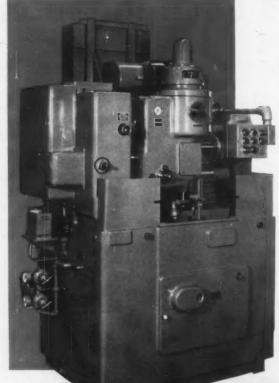
Price Levels Move Up

Disposable income is charted by the government in terms of both current prices and 1958 prices. This, of course, shows the effect of price changes on income.

Since early 1958 both these lines have been close together, indicating price stability. In the second quarter of this year they began to fan out. And in the third quarter the gap has widened still more.

AUTOMATIC WORK HANDLING

Is A Natural Complement to the High Production Rates of the Fellows 4GS Gear Shaper



Although designed for both manual and automatic loading, the 4GS Fellows Gear Shaper makes best use of its high production rates when equipped with work handling devices.

The physical construction of the machine is such that it may be easily adapted for use with magazines and chutes for automatic loading and unloading at substantial cost savings on continuous production runs.

Ask your Fellows representative about the many advantages of automatic work handling with the 4GS Fellows Gear Shaper, or write direct to the Fellows Gear Shaper Company.

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These internal clutch parts are fed automatically from a vibratory feeder down a chute to the magazine slide from which they are located and clamped. The cutter spindle is automatically stopped at the top of its stroke for clearance during the loading and unloading cycle. Cutting time is 1½ minutes. Gear Data: 10 Teeth, 12.4 Pitch (Stubbed), 30° Pressure Angle, Spur, 5/32" Face Width.



This transmission cluster gear shaft is handled by two sets of air-operated "fingers" mounted on a turret. As the turret rotates, one set of fingers moves the finished piece to the unloading chute while the other set brings the new blank into position. Cutting time is 35 seconds. Gear Data: 10 Teeth, 12.4 Pitch (Stubbed), 30° Pressure Angle, External Spur, 56" Face Width.



This automotive stem pinion is handled in the same manner as the cluster gear. In both cases, safety devices prevent the machine from starting unless the blanks are in the correct cutting position. Loading and unloading chutes may be hand or conveyor fed. Cutting time is 2½ minutes. Gear Data: 17 Teeth, 10 Pitch, 19° 30' Pressure Angle, 32° 51' Helix Angle, 5%" Face Width.

PRECISION

Cour Gear Production Equipment

Are Excessive Marketing Costs **Draining Your Profits?**

By T. J. McGann, Consultant, New Rochelle, N. Y.

Hidden marketing costs can do much to drive down net profits.

One way to uncover them is by analyzing distribution costs.

This first of a three part series tells what management can gain from such a program.

 Profit-wise, some products only. "spin their wheels." Others pay out a dollar for every eighty cents they bring in. And some are applauded for only making half the profit they should.

The sad part is that management often doesn't know these conditions exist. Or, if aware of them, is at a loss to ferret out the real causes for the drain on profits.

Check Marketing Costs-Hardto-pin down marketing costs are often the reason for low profit levels. Inefficiency in marketing operations is said to run anywhere from 20 to 50 pct. But a sound program of distribution cost analysis can do much to turn up excessive marketing costs.

Distribution cost analysis organizes marketing cost data in ways most useful to marketing management decisions. It makes possible a review of marketing policies, methods and procedures in terms of cost and income.

Boost Net Profit-The primary purpose of distribution cost analysis is the improvement of net profit. Its major objective is to identify sources of both profits and losses.

It goes much beyond the conven-

tional profit and loss statement. The conventional P & L statement is not really a profit and loss statement; it is a profit or loss statement.

Distribution cost analysis shows a total net which is either a profit or a loss. But, in addition, it also shows the factors which contribute a net profit and cause a net loss. Thus, it produces statements which, in reality, are profit and loss statements.

Look at Functions - In many ways it parallels factory cost accounting. One assembles costs by operations, the other by functions. Distribution cost analysis assembles costs by functions.

All operating costs are assembled into functional centers such as order processing, inventory space costs, etc. Each functional cost is then allocated to a product, customer or territory according to their demand on each function.

This data can be gathered in a

number of different ways. And it can be brought to bear directly on problems such as pricing, order quantity, distribution warehousing and other marketing areas.

Helpful Results-But the profit and loss statements prepared by product or product lines, territories, customer or customer groups, and units of sale are the most helpful results of a distribution cost analy-

They answer the questions most frequently asked by management. Also, collecting the data for them provides information with which to answer other questions concerning marketing costs.

Here are the common types of information which can be obtained from an analysis of distribution

1. You can determine the net profit and loss of individual products or product groups.

Some products lose money sim-

Beginning A Vital New Series for Management On: Distribution **Cost Analysis** THIS WEEK-How It Can Boost Net Profits **NEXT WEEK—Setting Up A Sound Program** NOV. 19-

Putting the Results to Work

ply because their net profits are not known. As a rule, gross profit by product is known. And often it is assumed that a good gross profit means a good net profit. This assumption is by no means borne out by fact.

Studies have shown some highgross profit items to have even higher cost patterns and, therefore result in losses; while other lowgross profit items have even lower operating costs and, therefore, produce a profit.

Drain on Profits—In one company, top management felt Product A was a real money maker and Product B could be dropped from the line without much effect. Distribution cost analysis showed that Product A sustained a loss equal to 105 pct of the company's total net profit while Product B contributed a net profit equal to 170 pct of the total net profit.

In another company, 30 out of 75 products showed losses. They drained 45 pct of the profits from other profitable lines.

2. You can determine the net profit status of each of your sales territories.

Sometimes the sales effort is spread too thin in a particular territory. This not only works against good sales service but also results in higher costs for the service that is given.

While many companies know the direct costs of a territory, they do not know what the other costs amount to. But when a company enters a new area, it makes an investment. It wants to know when the investment will pay off and how much. One company found that 85 pct of its territories were loss operations.

You can determine the net profit status of each of your customers,

Despite increased selling time and effort some customers will never be profitable. Because of the high operating costs attendant to them, and low sales potential, the picture wouldn't change if one supplier obtained all their business.

A particular volume class of customer in one company's territory showed a net profit of \$175 per call. In another territory, a call on the same volume class of customer sustained a loss of \$48 per call. In fact, one company found it was selling a whole industry group at a loss.

4. You can determine the net profit status of each of your channels of distribution.

If you use more than one channel

of distribution, you need to know channel profitability to direct your total marketing activity effectively.

Several manufacturers have studied this carefully in recent years. In some cases they have dropped one channel and concentrated on another. One found direct distribution to be a loss operation while distribution through wholesalers was profitable. Today it only sells through wholesalers.

You can determine the net profit status of order quantities.

Any size of order produces so much gross profit dollars. But if the paper work and other costs amount to more than the gross profit dollars yielded, a loss results.

If you know your order-size profitability, selling emphasis may be directed to exploit strengths and correct weaknesses in this area.

You can determine the effect of volume changes on net profit.

By examining each product, you can pinpoint the movement in cost and gross profit dollars at various levels of volume.

This turns up avenues for further exploitation. In one company, such an analysis showed that one product would have a 400 pct increase in net profit if its volume increased 50 pct. Knowing this, it was at-

Sharp Eye For Costs, Profits

Getting at the heart of the problem is Thomas J. McGann's biggest job.

As a consultant in distribution, he first must find out what the real facts are, then figure out what should be done about them. This calls for a sharp eye for costs and a firm grasp of marketing know-how.

He has both. A graduate of Harvard Business School, Tom Mc-Gann is a certified public accountant. He's taught accounting in two colleges, was formerly professor of marketing at Marquette University.

But his business acumen was not gained on the campus. He's held merchandising assignments in major department stores and later served as a senior accountant in a New York CPA.

Now in his own business, Mr. McGann numbers among his clients members of the American Steel Warehouse Assn., National Assn. of Aluminum Distributors and the Brass and Copper Assn.



Thomas J. McGann

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You can determine your costs by activities or functions.

Under natural expensing (such as rent, wages) it's almost impossible to find out the total cost of any function, since a natural expense may service several functions. Rent can service two or more functions, and wages can service ten to fifteen.

Under functional costing, all costs belonging to a function are charged to it. You can know what it costs to perform that function and can reduce the functional cost to a unit, such as \$1.75 per order for the function of order processing.

8. You can compare your costs, function by function, among your branches.

This will enable you to set standards of costs. Even if you don't have a branch operation, you can still set functional cost standards through the use of distribution cost data. This will give you excellent control over your marketing cost structure.

You can determine whether you can perform a function more efficiently than an outsider.

For example, in a distribution cost analysis, all delivery costs are contained in one function (delivery). You can compute your unit cost of delivery by miles, by tons or by hours and miles.

You can then get a bid from a company which leases delivery equipment. Matching its cost with yours will point out the most efficient course of action.

10. You can determine the propriety of your price schedules.

If a manufacturer has its own distributing units and charges products to them on a price schedule, distribution cost analysis can show whether these charges are reasonable or not.

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Why Get Into Distribution Cost Analysis?

The business climate is now very favorable to the setting up of a distribution cost analysis program. Some of the factors which influence this are:

Growth of Marketing Concept

Company after company has realized its operations must be geared to the market for its products. This readjustment in thinking places new emphasis on marketing and all that goes into it.

Since distribution cost analysis deals with marketing costs, and since it is a management tool, we can look forward to its greater use.

Spread of Scientific Methods

It's now obvious to all but the most unseeing that decisions can be made more soundly on the basis of facts than "hunches" or opinions. The rapid expansion of market research is evidence of this.

Business men are now learning that facts on costs and profits are equally attainable through distribution cost analysis. They will try to get them.

Laws Affecting Competitive Pricing

The Robinson-Patman act is the most basic statute affecting competitive pricing. Under its "due allowance for cost" proviso, price discriminations are permitted which properly reflect differences in cost.

But cost justification has not been used too successfully as a defense because companies tried to assemble distribution cost information after being charged with price discrimination.

Acceptance of Factory Cost Accounting

Factory cost accounting went through many years of "growing pains." It's now recognized as a very valuable tool of production management. If cost accounting can develop data for production costing, it may also produce it for distribution costing.

Stronger Competition Ahead

Competition has become increasingly intense in recent years. This has caused a cost-price squeeze, forcing management to scrutinize operating costs.

And competition in the future, seeking to capitalize on increased population and higher living standards, will become keener. This will call for firm and complete marketing cost data.

Shift in Accounting Emphasis

For many years accountants have followed the general emphasis on external accounting. Now they are beginning to realize that internal accounting brings them closer to management.

They want to play a greater role in management. Distribution cost analysis will further this.

Trade Association Efforts

Executives of trade associations are carrying on educational programs for their members. Seminars and instructions booklets are being prepared.

Cases in point are the American Steel Warehouse Assn., the National Assn. of Aluminum Distributors and the Copper and Brass Warehouse Assn.



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Truckmakers Look for Big Year

Predict Second Highest Production Year in History

Truckmakers are expecting sales to climb over a million in 1960.

And variety will be a big part of the sales pitch, with hundreds of different size, weight and model trucks turned out.—By A. E. Fleming.

Automotive strategists are planning big—and little—things for the truck industry in 1960 and years to come.

They are preparing for the second heaviest sales flow in history next year. They are planning on a steadily growing demand for trucks during the next decade. And, clipping a page from the small car makers' workbook, they are studying the "economy truck" market.

Over a Million—E. N. Cole, Chevrolet general manager, and P. J. Monaghan, GMC Truck and Coach general manager, agree that 1.1 million new trucks will be sold in the U. S. in 1960. H. P. Sattler, head of Chevrolet truck sales, predicts 25,000 fewer sales, in the 1,075,000 area.

These are tall figures. If they prove accurate, 1960 will be the second best year for truck sales. The best was 1950 when 1,142,000 were sold. It would also be the first time since 1951 (1,003,000) that the one million line was crossed (it has only happened in 1948, 1950 and 1951). And it would surpass by almost 200,000 units the 10-year sales average from 1949 through 1958 (911,000). Around 990,000 deliveries are anticipated in 1959.

Economy Helps—There are several reasons for the fancy outlook. There is a feeling that general economic conditions will improve, for one thing. A healthy economy will release a stored up need for new

trucks by all kinds of operators who, until last spring, put off purchasing because of the recession.

Then there is the growing city population with its great need for transportation of goods and services. Finally, there are swarms of old trucks that are worn out and must be replaced.

In 1941 the average age of U. S. trucks was 5.6 years. It grew to 6.8 in 1956 and 7.0 in 1957. Today the average age of the 11.2 million trucks in service is 7.2 years.

Past performance indicates most trucks head for the scrap heap between 7.5 and 13.5 years of age. This means the average age of today's trucks is just below the minimum scrapping level.

Ready for Scrap—About 40 pct of U. S. trucks are 8-years-old or more, including 600,000 models of pre-1941 vintage. And the percentage of the truck population in the



WIDE SIDE PICKUP: Made by GMC Truck & Coach Div. of General Motors, its features include industry's

first V-6 truck engine, low-level headlamps, torsion bar front and coil-spring rear suspension.

five years and under bracket is 40 pct, lower than any time since 1948. Estimates are that 528,000 trucks will be scrapped in 1960, or 143,000 more than in 1958.

Things look good for truck makers on a long range basis, too. Wilbur Chase, Ford Div truck marketing manager, says that by 1970 as many as 1,450,000 trucks will be marketed annually. By 1970, he says, trucks on the road will rise from today's 11.2 million to 15 million. This would carry on the rise which has seen our truck population grow 150 pct in the last 20 years, while the annual production rate has gone up 40 pct.

Greater Variety—An expanding truck market of the kind anticipated means new truck facilities will have to be built. Many producers today are operating at peak capacities. They are turning out hundreds of different size, weight and model trucks. The variety will continue to increase.

Along these lines comes a growing interest in small, economy trucks

—kin to the small cars the Big

Three came out with this fall.

E. R. Breech, Ford Motor Co. board chairman, says his company eventually will have a small truck. He doesn't say when.

Company Needs—However, last June the Bell Telephone Co. requested bids for a small walk-in truck with an 8 ft long body. Both Ford and Chevrolet are building prototypes for such a model. Along similar lines, an Alabama coach firm is using GMC components in preparing a small bus.

International Harvester is the only U. S. company now selling a small truck. Called the Metro-Mite, it is 13 ft long, has a 51 hp engine and a 1000 lb load capacity. It sells for around \$2500 plus taxes and is used for light delivery work. It has been on the market nine months.

Divco, a small volume truck producer, has been turning out a little bus since last spring. It is attracting interest among school and suburban transportation systems.

Non-Diesels—A husky market is developing for diesel engine trucks. Sales of new diesel models will leap to 31,000 units this year, nearly 50 pct higher than a year ago. In 1954 only 8751 diesels were sold.

Aiming for this fresh market for the first time this year is Dodge. Using a Cummins engine in hightonnage models, Dodge is the only member of the Dodge-Ford-Chevrolet trio currently making a diesel truck. Ford has one in the works. But it isn't ready yet and won't be in the present model year.

Eliminating the Bugs — Meanwhile, out at the proving grounds, engineers are still toiling over gas turbine engines. Chevrolet has a new experimental truck that combines a heavy-duty tandem axle tractor with a 225 hp gas turbine engine. Fuel consumption is the main area in which significant improvements still must be made.

Small Cars Selling Big

Rambler is continuing its amazing pace. Retail sales Oct. 1-20 totaled 20,129 units compared to 15,889 in the same period last year. Since Jan. 1 dealers have sold 295,-653 new Ramblers, more than double the 139,332 delivered in the same period last year.

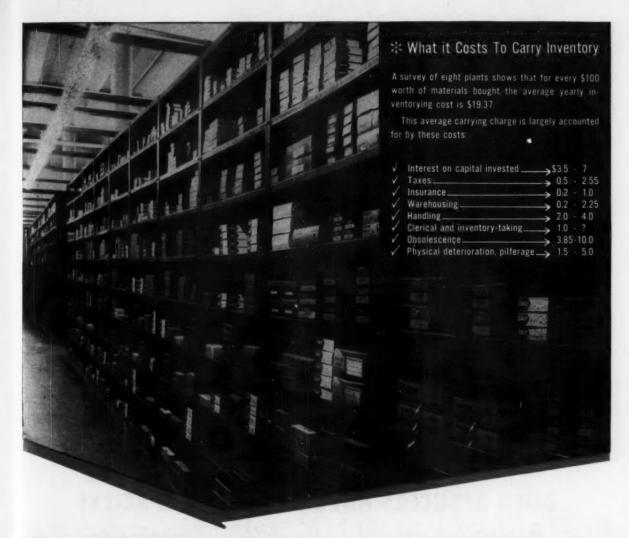
Full Power—American Motors is turning out cars on a six-day, two-shift basis to keep up with the record demand. To increase production, 1000 employes are being added to Kenosha and Milwaukee plants. This will boost employment at the plants to 22,100, an all-time high.

Studebaker Lark sales in the first 10-day period following public introduction, Oct. 15, were 46 pct above a year earlier. Record deliveries of 20,000 new models to dealers prior to introduction were a factor in the strong sales showing.

Sales of Fords the first 10 selling days after introduction were 23 pct higher than a year ago. Thunderbird sales the first full week after introduction topped the comparable period in 1958 by 65 pct. More than a half million Fords, including 97,000 Falcons, are scheduled for production before the end of 1959.

The Bull of the Woods





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Move on for National Sales Tax

There is new talk in Washington calling for a national sales tax.

The big reason behind it: The cold war with Russia and its effects on government spending.—By G. H. Baker.

There's fresh talk of a national sales tax. A Republican National Committee task force is recommending such a tax. The proposal is in line with sales tax plans previously urged by Vice President Nixon and Secretary of Commerce Frederick H. Mueller.

The reasoning of the sales tax advocates is this:

The U. S. must begin to face up to the fact that the cold war with the U. S. S. R. will go on indefinitely. It will become more expensive as weapons become more complicated.

Taxes on income—both corporation and personal—have reached the point of diminishing returns. A national sales tax is the last great untapped source of revenue. What's more, the existing pattern of federal excises is not equitable. Some products and services are heavily taxed (liquor, tobacco, telephone), while others bear no tax. Equalizing the rate at 2 or 3 pct would spread the burden evenly among all taxpayers.

High Hopes—The American Retail Federation has declared its determination to kill all federal excises next year. This is an ambitious project, of course. ARF officials say privately they'll be doing well to get some of the rates (particularly those on luggage, jewelry, and other consumer items) cut in half.

Many of these excises were applied in World War II for the primary purpose of discouraging consumer sales. Raising revenue was a secondary consideration.

The tax-writing House Ways and Means Committee will hold public hearings, beginning in November, on a long list of proposals to bring equality to the internal revenue laws. Tax reduction is not among the topics slated for this airing.

But popular demand for tax cuts could quickly result in favorable consideration of the problem. Next year is an election year, and House members, particularly, are becoming solicitous of the public's wishes.

Space Budgets Due For Increases

Federal spending to unlock the mysteries of outer space is due for a sharp rise in the new budget. The exact amount will be disclosed when President Eisenhower sends his spending estimates for the 12-month period starting July 1 to the Congress in mid-January.

Saturn, the super-booster (1,500,-000-lb thrust) developed by the Army, is now included in the budget of the National Aeronautics and Space Administration. Saturn cost \$34 million in the fiscal year that ended last June 30. It is due for \$70 million in this fiscal year.

More Needed—Dr. Werner von Braun says the project needs an additional \$50 million in this fiscal year, bringing the total for this project alone to \$120 million.

Scientists warn that space exploration is going to cost staggering sums of money within a few years.

New System to Stop Tax Gyps

Taxpayers who now are apt to stretch the truth a bit, playing the percentages that their return won't be looked over by the taxmen, won't be able to play this game much longer.

By 1967, the Internal Revenue Service plans to have machines in service that will bring the cheaters up short. These new electronic gadgets will check every income tax return in detail—and pick up any phonies.

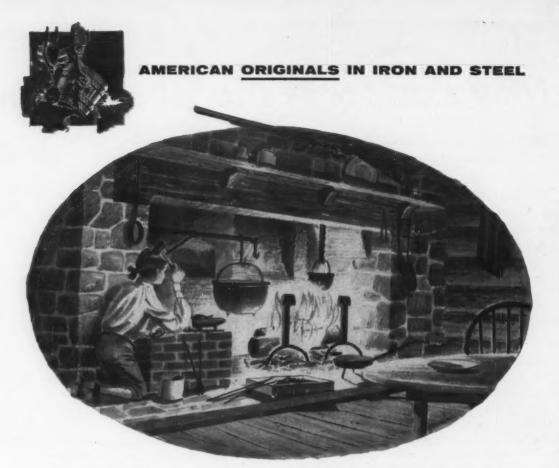
Millions for Billions—IRS will spend about 100 million for the machines. But officials figure the government will pick up billions of dollars in extra revenue by keeping the taxpayers honest.

At present, men and today's machines manage to go over on a spotcheck basis only one out of every 30 returns. There are about 300 million tax returns filed every year.

Electronic Check—The first pilot machine tax checking system should be in operation in 1961. It will involve feeding information from tax returns into electronic processors which would record the data on magnetized tape, along with data from other sources and data on "average" income and expenses for various groups. If figures don't match, the machine will toss a card out to waiting tax agents. Then, the detailed audit of the return would start.

This new machine system will have some rosy effects. By plugging tax leaks, tax rates may go down. Also, honest overpayments will be picked up and paid.

59



The forge in the chimney corner

As our nation continued to expand after the Revolutionary War, one of its most pressing needs was for greater production of simple, flat, iron nails. The nails of that time generally were crude fastenings, hammered by hand from strips of metal. The process was inefficient and time consuming. But, the need was so great that even children in the home were pressed into service as nail makers.

In 1789, a Member of Congress stated: "It has become common for our country people to erect small forges in chimney corners. Great quantities of nails are made . . . even by children." But a year later, in 1790, the situation was suddenly changed by a Jacob Perkins of Newburyport, Massachusetts. Perkins, a

mechanical genius of his time, invented a nail-making machine capable of producing 200,000 nails per day, and thus brought an end to the task of household nail making.

Many men, machines, methods and materials have contributed to the development of our iron and steel industry. We at The J. E. Baker Company are proud of the fact that, for many years, steel makers have relied on Baker's Magdolite and Jebcolite, the original deadburned dolomites for more uniform ingots, greater furnace efficiency, and lower refractory costs. Magdolite and Jebcolite offer many advantages . . . in superior composition, preparation, strength, economy and quality.

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Do Business and Politics Mix?

Aerojet-General's Plan to Improve Voting Succeeds

Non-partisan program for politically better-informed workers has worked out well for California manufacturer.

Some tips: Play it straight, avoid any pressure, direct or indirect.—By R. R. Kay.

• Industry in politics? It's usually poison. But does it have to be?

Here's a practical plan for mixing the two. The aim: A healthy boost to democracy through politically better-informed workers.

Money and Interest—The idea went over big at Aerojet-General Corp. plants in Azusa and Sacramento, Calif. Dan A. Kimball, president, and former Secretary of the Navy, calls it a "Good Citizenship Campaign."

"It's natural that if you back your favorites with a few dollars you're more likely to take an interest in what they stand for. You'll want to know who they are and do your part to make winners out of them," Mr. Kimball says.

Avoid Pressure—Employees at Aerojet are urged to get on their favorite political bandwagon—to see and hear candidates. Office seekers come to the company's plants to speak. Employees are invited to chip in for the party and man of their choice.

Caution: If you try this plan in your own plant, avoid pressure of any kind, direct or indirect, Mr. Kimball advises.

Operating Procedure — Here's how to set it up. Form a Democratic and Republican Good Citizenship Committee at your plant.

Use the secretarial help, union committeemen, shop stewards, supervisory people, and company officials. Then let all your other employees know what you're doing.

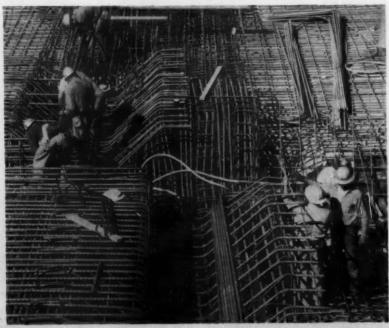
Contributions Welcome—Solicitor-teams in each department serve as volunteer workers. They pick up contributions from Democrats and Republicans alike. The contributor names the party or candidate who is to get his money. A "Good Citizen" sticker then goes on the man's plant badge.

Each employee gets a reminder to register. If he hasn't, then he gets the word on where and when he can do it right in the plant. Registering is done outside of working hours.

To get the word around even more, send each employee a written memo telling him when official registrars will be in the plant. Plug the "Good Citizenship Campaign" on your public address system.

The Results—Aerojet is satisfied with the results. During the last election 2000 persons registered to vote. About 70 pct of the working force—11,000 employees—contributed. Total amount collected: \$25,000. Average donation: \$2.30.

Missile's Pad Is a Maze of Bar



FIVE HUNDRED TONS: Heavy concentration of reinforcing bar is located at Atlas missile launching base in Reardan, Wash. Bethlehem Steel's Seattle plant turned out more than 500 tons of re-bar for the job.



Electronic parts courtesy Judson Mfg. Co., Inc., Cornwells Heights, Pa

Mirror-bright without polishing, after switch to Sunicut

Boring on a multiple-spindle automatic produced the finish you see on these electronic parts. Sunicut 102-S Cutting Oil saved time and money by eliminating the polishing operation. The same automatic uses Sunicut 102-S to machine metals ranging from titanium to stainless 410.

Sunicut 102-S is one of a full line of cutting oils known throughout metalworking for maintaining long tool life, close tolerances, and fine finishes. There's a grade of Sunicut that can help you improve your product quality—and that's the best economy of all.

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MAKERS OF FAMOUS CUSTOM-BLENDED BLUE SUNOCO GASOLINES

Is the Inch Too Inaccurate?

Cost of changing U. S. system of measurement from the inch to the metric system would be high.

But space experts claim the need for accuracy outweighs cost.—By R. H. Eshelman.

• Is the inch obsolete? Does this scientific era demand a better system of measurement? Those questions cropped up anew in a meeting of the American Standards Association in Detroit last week.

Crux of the new argument is a statement by John P. Hagen, assistant director of program coordination of National Aeronautics and Space administration. He told the standards engineers that international cooperation is necessary to solve problems of space conquest.

Change Pigeonholed — Such cooperation can become practical only through international standardization, he added. He pointed out that today's best measurements may no longer be precise enough for space exploration.

From the Congressional committee on Science & Astronautics came the report of two bills introduced in the last season of Congress. These would have set up an investigation by the Bureau of Standards on how a conversion to the metric system could be made. Both bills were pigeonholed.

Costs Outlined — Development head, R. W. Ernsberger, of Eli Lilly & Co., a pharmaceutical firm, related how and why his company converted. Cost was about \$30,000, he said.

Of that, \$10,000 went to equipment, the balance in direct labor costs. Main problems were psychological. These were readily overcome by preplanning, he noted.

Protests Voiced—Answer of the metalworking industry was quickly placed on record. "It's simply ridiculous," retorted Victor Raviolo, executive director, engineering staff, Ford Motor Co.

In his own firm, he estimated, the change would dissipate from 1/6 to 1/5 of the total assets. He asserted that decimal dimensioning, pioneer-

ed by Ford, embodies many of the advantages cited for linear metric measurement.

Not Interchangeable—Ralph M. Drews, chief metallurgist for fabricating divisions of Republic Steel, warned proponents that sober thinking must be given the billions of dollars invested in present engineering drawings, as well as machines.











president, George E. Merryweather, Motch & Merryweather Machinery Co., (top right); second vice president, I. B. Rabel, Star Machinery Co., (bottom left); secy.-treas., C. D. Day, Machinery Assoc., Inc.

INDUSTRIAL BRIEFS

Gas Expansion—Linde Co.'s new multi-million dollar plant at Pittsburgh, Calif., was dedicated Oct. 22. The plant produces nearly 300 tons daily of liquid oxygen, nitrogen and argon. Other plants have been planned for Torrance and Fontana, Calif., Neosho, Mo., and Huntsville, Ala.

Same Name—General Mills, Inc., has acquired the business and assets of Magnaflux Corp., Chicago. Magnaflux Corp., a leader in non-destructive testing, will continue at its present location in Chicago and under the same name as a subsidiary of General Mills.

Twice as Much—The Forging Div., Kaiser Aluminum & Chemical Corp., Erie, Pa., has doubled its contract forging capacity through a \$5 million plant expansion. This includes three large E. W. Bliss Co. water - accumulator hydraulic presses, two smaller oil hydraulic trimming presses and five forging preheat furnaces.

Cold Mill—Mesta Machine Co., Pittsburgh, will design and manufacture a 66 in. four-stand tandem cold mill and related equipment for the Ford Motor Co., Dearborn, Mich. The mill will be capable of cold reducing steel strip up to 61½ in. wide.

Nuclear Propulsion—The Bridgeport Brass Co. is working with the Aircraft Nuclear Propulsion Div. of General Electric on hot extrusion of yttrium metal and its alloys. The material has been extruded both clad and unclad to mill type shapes, including tubing. The work is for airborne nuclear propulsion systems using exotic metals.

Lake Front — Dominion Foundries & Steel, Ltd., Hamilton, Ont., will build a third blast furnace on its bay front property for operation late in 1960. It will increase pig iron capacity about 50 pct. During

1960, Dofasco will spend about \$20 million on their bay front facilities. A second continuous galvanizing line will be set up to produce aluminum coated steel sheets.

Flying Shear—A new 18-in, billet mill flying shear, engineered and built by Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., has been installed at Pittsburgh Steel Co.'s Monessen, Pa., plant. It is designed to handle billets up to 2-1/2 in. square.

Plant Purchased—The Meehanite Metal Corp., New Rochelle, N. Y., has been purchased by Harry H. Kessler & Associates, St. Louis. Mr. Kessler will become president of Meehanite Co. No change in location or method of operation is planned. Meehanite will continue to operate as a separate company.

Third Performance — The third Western Tool Show, sponsored by the American Society of Tool Engineers is scheduled for Nov. 14-18, 1960, at Los Angeles. Over 15,000 creative manufacturing executives and engineers will view latest methods and machines exhibited by 250 companies.

Offer Approved — Directors of Western Pipe & Foundry Co., Tyler, Texas, have approved an offer by Woodward Iron Co., Bir-



"Beautiful, Robert, but I'm anxious to see how the other 650 lines will look."

mingham, Ala., to buy Western Pipe assets. If Western Pipe stockholders approve the sale, the Tyler plant will become a part of the Woodward pipe division and will be improved. Western Pipe manufactures soil pipe.

Getting Bigger — Kaiser Aluminum & Chemical Corp., has completed expansion of super purity production facilities at its Mead, Wash., reduction plant. Two refining cells have been installed and are in operation. They raise Kaiser's super purity aluminum capacity to more than 1 million lb annually.

Missile Work—Electric Machinery Mfg. Co., Minneapolis, has a \$750,000 contract for four large electric generators and switchgear. Cooper Bessemer Corp., Mount Vernon, O., placed the contract with E-M. The engine - generator sets will be part of the new Nike-Zeus.

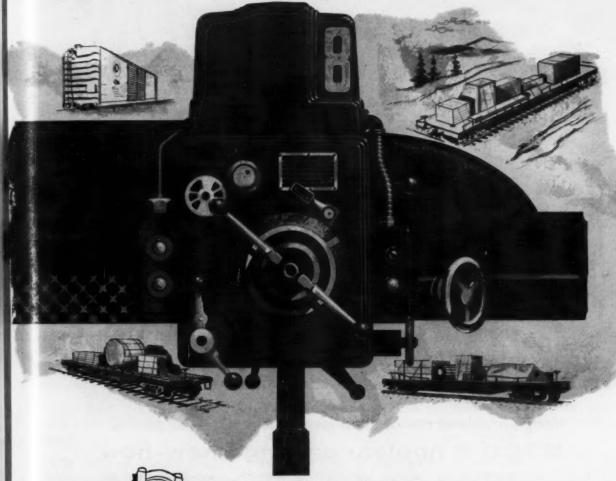
R & D Center—The Louis Allis Co., Milwaukee, manufacturer of electric motors, generators and speed drives, is building a new research and development center in Greendale, Wis. The company's plans include electronic and nuclear areas.

Visiting Day—An open house at Carpenter Steel Co.'s new mill branch warehouse and specialty steel service center was held on Oct. 24. More than 800 metalworking executives representing major industries in the Delaware Valley attended.

Edmonds Named — J. K. Edmonds, has been named asst. executive vice president of the American Institute of Steel Construction. His office will be at the Institute headquarters, 101 Park Ave., New York.

Possum Points — Westinghouse Electric Corp. will provide three canned motor pumps for use in a controlled-circulation boiler. They will be installed at the Possum Point Station of Virginia Electric & Power Co., near Quantico.

MACHINERY





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and the railroads

The wondrous machine tools of modern production technology put an estimated 24 horsepower in the hands of the average American industrial worker—an incredible 480 times his own musclepower. Machinery manufacturers are constantly seeking new ways to put still more horsepower at his disposal . . . make him still more productive . . . to increase, still further, his standard of living.

And because no other form of transportation provides the economical tonnage capacity and efficiency of rails, machine tool producers are major users of railroad service. Much of this tonnage is carried on cars equipped with National Railroad Specialties. That's because National products make a substantial contribution to even more efficient railroading.

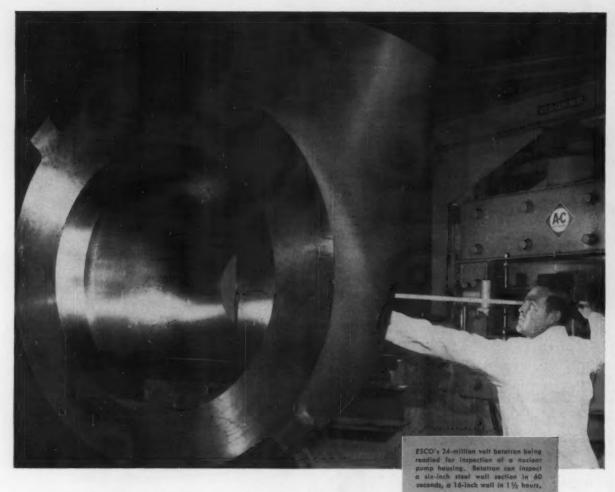
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TH



W. N. Matheson, appointed excutive vice president, Oliver Iron Mining Div., U. S. Steel Corp.

Columbia Steel & Shafting Co.— G. E. Parker, named chairman of the board; T. L. Parker, named president.

The W. L. Maxson Corp.—W. H. Beal, elected president and chief executive officer.

Morrison Railway Supply Corp.

—F. T. Ridley, appointed vice president, sales development and traffic.

Morrison Steel Products Inc.— R. G. Lyall, appointed chief engineer.

Olin Mathieson Chemical Corp., Metals Div.—J. F. Hack, appointed national accounts manager for Western Brass.



C. R. Funk, named chief metallurgist, Eastern Div., The Colorado Fuel & Iron Corp.

Luria Bros. & Co., Inc.—Lewis Willner, elected vice president.

National Carbon Co.—W. A. Steiner, appointed vice president, technology.

Westinghouse Air Brake Co.— C. D. Howell, appointed asst. vice president, manufacturing.

American Brake Shoe Co., Denison Engineering Div.—W. J. Pelich, appointed sales manager.

H. K. Porter Co., Inc., Forge & Fittings Div.—W. H. Dresing, appointed manager, commercial forging sales, Cleveland Forge Works.

Westinghouse Electric Corp., Air Conditioning Div.—W. E. Hoctor, named manager, manufacturing, Staunton, Va.

Salem-Brosius, Inc.—E. L. Talley, Jr., appointed manager, sales, mechanical products.

Crucible Steel Co. of America— W. E. Lynch, appointed superintendent, blooming mill, Midland, Pa., works.

The Market Forge Co.—Herbert Swanson, appointed chief engineer, and E. H. Barry, manager, Janitorial Equipment Div.



M. J. Gross, appointed director, manufacturing, Consolidated Vacuum Corp., Rochester, N. Y.



E. P. Cunningham, named senior vice president, Clearing Div., U. S. Industries, Inc.

Clemson Bros., Inc.—G. A. Hill, appointed district manager, sales, midwestern states.

Allis-Chalmers Mfg. Co.—H. M. Raber, appointed works manager, turbines.

Birdsboro Steel Foundry & Machine Co.—J. P. Anderson, elected asst. secretary.

Kelsey-Hayes Co., Metals Div.— C. J. Bergen, appointed manager, sales administration; P. W. Nolan, (Continued on P. 82)



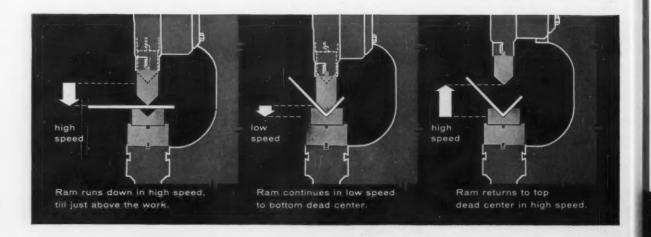
H. C. Jones, appointed asst. to the president, Consolidated Vacuum Corp., Rochester, N. Y.

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If you form long, flexible parts, you can increase your production up to 60% with a Cincinnati Automatic Cycle Press Brake.

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You can get this money-making feature on all new 7 and 9 Series Cincinnati Press Brakes.

This productive new feature means a lot of advantages for you:

- 1. Job records show 10% to 60% increase in parts formed per hour.
- 2. Low speed portion of the ram stroke can be set so that all strokes are identical in length.
- 3. Rejects caused by "back bends" are stopped.
- 4. Highly experienced operators are not required.
- 5. Operator fatigue is greatly reduced because there is no need for clutch slipping.
- Clutch and brake are long-life, minimum-maintenance units requiring no adjustments.

Write Dept. B for full details about the Cincinnati Automatic Cycle, Bulletin B-9R.

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Fundamental research of this type serves two end results at Allis-Chalmers: 1) enables design engineers to make equipment even better; 2) helps every industry achieve new efficiencies and economies.

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Research is only one area where A-C helps. Single-source availability of "teamed" equipment, maximum engineering assistance and outstanding service facilities are others. For more information, contact your A-C representative, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

Products for Industry Electrical Generation, Distribution and Utilization Equipment; Pumps; Compressors; Mechanical Power Transmission Equipment; Processing Machinery; Motors and Control; Water Conditioning Systems, plus Materials Handling Equipment.

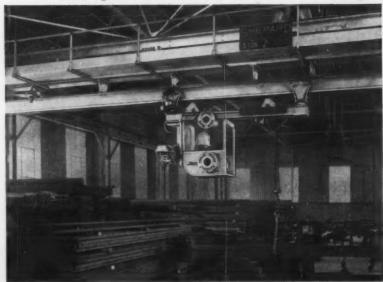


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(Continued from P. 79)

appointed manager, market planning, and R. S. Spencer, appointed eastern sales manager.



H. A. Roemer, Jr., appointed manager, sales, Pittsburgh Metallurgical Co., Inc.



J. P. Strand, appointed asst. director, Technical Div., Technology Dept., Crucible Steel Co. of America.

The Kaydon Engineering Corp., Frauenthal Div.—J. E. Storm, appointed sales manager.

Daystrom-Weston Industrial Div., Daystrom, Inc.—E. C. Nicholides, appointed manager, manufacturing and LeRoy Soper, appointed employee relations manager.

Brooks & Perkins, Inc.—E. V. Schirmer, appointed chief engineer.

The Producto Machine Co.—B. S. Weissman, appointed controller.

The Bassick Co.—R. D. Mount, appointed general sales manager.

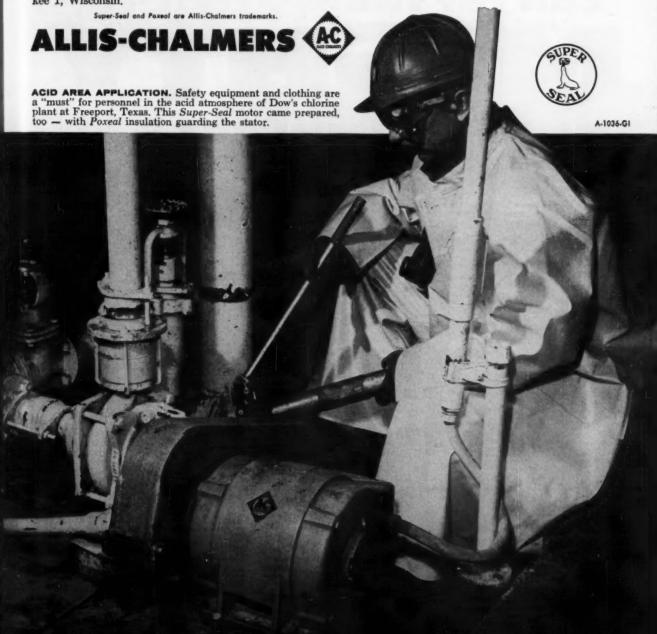
2-year acid test! Open motor

In a tough acid pump installation, Dow Chemical's Texas Division experienced no end of motor troubles. It seemed nothing could stand up in that humid, corrosive atmosphere. Reports Dow: "Even with totally enclosed motors, winding failures were frequent." And, they might have added, expensive.

Then came Super-Seal motors — Allis-Chalmers open-type motors with amazing Poxeal insulation. A durable case of epoxy-resin encloses the winding end turns and slot portions of the stator... the most complete protection ever developed. Result? The Super-Seal motor, after two years of continuous operation in the acid area, is as good as ever. So good, in fact, that Dow has ordered 150 Super-Seal motors for a new chemical plant at Freeport, Texas. Isn't it time to revaluate your motor standards? There's a good chance that costly enclosed motors are no longer needed. Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

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beats
enclosed
type at
its own
game



TOUGH

CLEANING JOBS

THIS LARGE WEST-COAST FOUNDRY cleans 3,400-lb. loads of steel castings in a 28 cu. ft. Super Tumblast, with one-third less labor.



SUPER TUMBLAST

With tireless cleaning power and super performance features, the Wheelabrator Super Tumblast gives you super cleaning capacity and efficiency. This is no idle claim . . . being field proven in three years of field experience in diversified applications in over 150 plants. The results prove that the Super Tumblast delivers high production, superior cleaning results, exceptional labor savings and unequalled economy.



A LARGE MID-WESTERN FOUNDRY doubled its cleaning rate with this Super Tumblast. Heavy loads of soil pipe fittings are cleaned in 5-min. blast cycles slashing labor and operating costs in half.

In over 150 installations, the Super Tumblast has demonstrated its ability to handle the really tough cleaning jobs. Get all the facts from Wheelabrator Corporation, 510 South Byrkit Street, Mishawaka, Indiana. In Canada, Wheelabrator Corporation, Canadian Division, P.O. Box 490, Scarborough, Ontario.



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A HIGH PRODUCTION MALLEABLE FOUNDRY cut cleaning time 70%, saved 20 man-hours daily, and increased cleaning output by replacing two older machines with this Super Tumblast.

WHEELABRATOR

AIRLESS BLAST
CLEANING EQUIPMENT

CORRECT APPLICATION

Sure, you're looking for the high conversion efficiency, low maintenance and simplified operation associated with semi-conductor rectifiers. And you'll get all these advantages — and more — if the semi-conductor rectifier is a right-for-the-job installation.

Your local Allis-Chalmers man will be glad to tell you whether or not a semi-conductor rectifier is best for your specific operation. He can afford to be completely unbiased in the approach to your problem because Allis-Chalmers makes all types of power rectifiers. At his disposal, and yours, are vast research and engineering facilities. Behind his recommendations is the assurance found in the fact that Allis-Chalmers has been developing, building and applying rectifiers for almost 25 years.

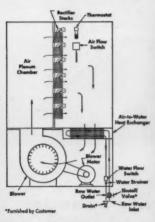
is the key to semi-conductor rectifier efficiency

For complete information, call your A-C representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin. In Canada, write Canadian Allis-Chalmers Ltd., Box 37, Montreal, Quebec.

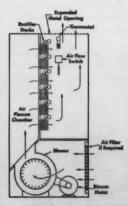
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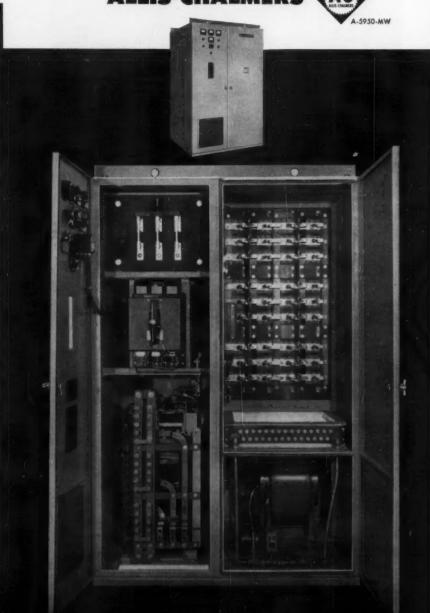
CHOICE OF COOLING SYSTEMS



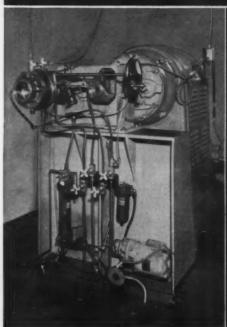
A recirculating air system featuring an air-to-water heat exchange is employed where atmosphere is corrosive or dusty.

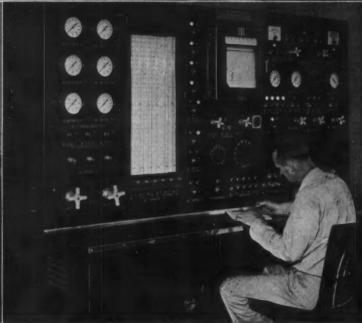


A simple air-cooling method is recommended for use in near normal atmospheres and where water is not available.



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Clean, Phosphatize and Paint Metal Parts in Compact Unit

Do the metal parts you produce demand a near-perfect finish at high application costs?

Then this system might be just what the doctor ordered. It introduces an important new step, dry phosphatizing.

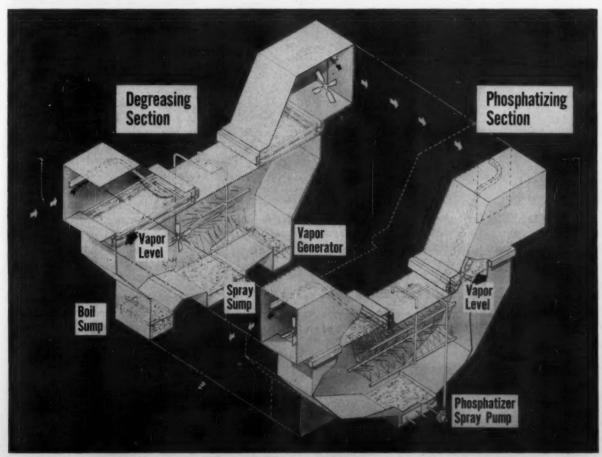
 Many new developments will move onto the metalworking scene during 1960. And one of them promises to be a metal-finishing system that combines cleaning, phosphatizing, and painting, all in one continuous operation.

Normally, such treatment of metals involves perhaps a dozen complex steps. It's a costly, long-drawn out method. And the equipment required usually takes up a good deal of space.

Initial outlay for the new equipment is about one-half that of the old conventional setup. Test runs indicate that operating costs should tumble by another 30 pct. From all appearances, the unit deserves close scrutiny in the months to come.

What Is the Newcomer?—The new process within the system, and an important one indeed, is trichlor-ethylene-based phosphatizing. It's a development of the Electrochemicals Dept., E. I. du Pont de Nemours & Co., Inc., Wilmington.

Although the newcomer is now



CLEANING TREATMENT: Soiled parts enter degreasing section where they are cleaned. They then

receive dry phosphate coating. Parts emerge completely dry, all ready for final painting operation.

available for extensive testing, du Pont engineers forecast total availability of the whole system some time next year.

Any Way You Want It—Versatility is one word to describe the system. You can use any combination of the three finishing steps whenever it's desirable to do so.

For example, if the parts are already clean, you can skip the first step and concentrate on phosphatizing and painting, or just one of them if you want.

Known as Triclene (a du Pont trade mark) trichlorethylene finishing, the system eliminates any need for ovens to dry the phosphate coating or to evaporate paint thinner. The system is built around an anhydrous or dry theory. So all parts are completely dry right after cleaning and phosphatizing.

Could Stand Improvement—Although vapor degreasing alone does a fine job of obtaining clean surfaces on parts for further processing, two vital traits needed improvement. But that was before research at the Chestnut Run Labs uncovered its trichlorethylene phosphatizing process.

After vapor degreasing obtains a thoroughly clean surface, this new nonaqueous solution improves paint bonding and corrosion resistance qualities. As such, this dry method replaces the current practice of water-based cleaning, aqueous phosphate coating, and rinses with a drying oven.

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What It Does—Metal parts enter the phosphatizer from the vapor degreaser. These parts are dry, clean, and hot. The solution is heated to 188°F, the boiling point of the solvent. This creates a trichlorethylene vapor zone over the solution.

Parts are then sprayed or dipped in this zone. A reaction follows between the solution itself and the metal surfaces. In the case of steel, it converts to a strongly adherent form of iron phosphate.

Time is no problem. Reactions take anywhere from 30 seconds to 3 minutes. During this time, they can convert coating weights from 40 to 200 mg per sq ft.

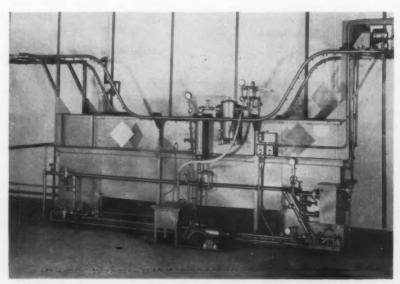
Takes on All Metals—Tests to date are even satisfactory on such varied surfaces as aluminum and zinc diecastings, and galvanized steel. It's easy to control the bath composition, too. You can handle this chore by specific gravity measurements and single end-point titration.

Since trichlorethylene vaporizes at a low 100 Btu per lb, heat required is also low. Compare this figure with the 1000 Btu's needed to convert a pound of water to steam.

Salt-fog and humidity tests indicate that the new phosphate coating greatly increases corrosion resistance. Likewise, impact, conical mandrel, and scratch tests show that coatings on steel surfaces lead to improved paint adhesion.

Dry Treatment—The coatings discourage another problem too. Although wet phosphates do resist a certain amount of rust from forming on phosphatized but unpainted steels, the new anhydrous treatment improves this trait even more. And this is a big help for parts earmarked for storage.

Look at the Savings—One comparative test reveals a 31 pct saving in operating costs with the new degreasing-phosphatizing method. The



LESS SPACE NEEDED: Demonstration unit at G. S. Blakeslee & Co. uses spray-in-vapor painting method along with degreasing. Whole unit consumes much less space than conventional setups.

Four Areas Where You Save

	*Conventional Method	Tricione Finishing
Finishing cost, \$/hour	48.50	38.10
Investment cost, \$	170,000.00	94,000.00
Operating area, eq ft	1,200	480

other method studied was a fivestage aqueous phosphatizing system using oven drying. Hourly cost per 1000 sq ft fell from \$2.85 to 1.97.

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There were savings in investment too. The older method demanded a total of about \$75,000 compared to nearly \$46,000 with the new process.

Huge Spendings—Right now industry spends about \$500 million annually for painting new work. Since much of this is sprayed by hand, one-half of it is wasted. New painting techniques, such as dipping, flow coating, and electrostatic spraying, do cut down on paint waste.

But none of these methods does away with fire and explosive hazards. Nor can any of them retain the paint thinners during drying and curing.

The Triclene metal-painting processes eliminate these hazards. They apply nonflammable paint automatically. Equipment needed for painting requires much less space than conventional setups.

At the Boiling Point—Trichlorethylene-thinned paints are applied at temperatures near the boiling point of the solvent (188°F). The process also includes equipment to recover the thinner from the paint film.

How is this done? First of all, the heat of the part causes all thinner to evaporate from the paint film. Then the trichlorethylene vapor, since it's four times heavier than air, drops down into the machine. Here, it's condensed and recovered.

There are two types of painting methods from which to choose. Dip painting is best on intricate, small parts. It's easy to apply. And it's a good method to cover hidden surfaces.

For the Big Parts—The "Sprayin-Vapor" method, on the other hand, does a more economical job on the larger parts. In this case, of course, companies are able to keep paint inventory at a minimum.

In hot-dip painting, parts are submerged long enough in a tank to

Compare Cost Breakdowns

Investment Area	Conventional Method	Tricione Finishing	
Installed equipment	\$33,000	\$27,000	
Building space	9,100	5,500	
Utilities allocation	17,700	3,200	
Working capital	13,800	10,000	
Total Investment	\$73,600	\$45,500	

raise the work temperature to that of the paint. This will usually be in the 150°-160°F range.

As soon as the parts are raised from the paint bath, they move through a trichlorethylene vapor zone. This tends to level surface defects.

How to Get Results—The thinner quickly evaporates as the part leaves the vapor zone. As soon as the thinner is recovered, it can be re-used as a paint charge or even for vapor degreasing. Good results depend upon holding the temperature near the boiling point of trichlorethylene.

The temperature should be a little higher in "Spray-in-Vapor" painting, about 190° to 225°F. Here, parts are lowered into a controlled trichlorethylene vapor blanket.

The vapor heats the parts slowly, so that, by the time the parts reach the spray area, they have the same temperature as the vapor. Then they're ready for painting.

Metal is a Factor—The type of vapor degreasing method you use depends on three main factors. First, you must study the metal to be cleaned. Some clean more readily than others, owing to the degree of chemical activity.

Second, what is the nature of the contaminants? Are they lubricants or soils? Certain contaminants, for example, lend themselves more readily to a spray-vapor action.

The size, shape, and end use govern the third area of choice. What a part will be used for often determines the degree of cleanliness.

Four Methods—There are four basic vapor-degreasing methods. The vapor method suspends parts in the vapor of a boiling solvent. As vapors condense on the cool part, the solvent dissolves the contaminants.

A second method is similar to the first, except that a liquid spray of warm solvent is applied. Then the part gets a final vapor rinse. Another method submerges the part in a warm liquid solvent, then transfers it to a vapor bath.

A fourth method holds the part in a boiling solvent. It's then cooled in a warm liquid solvent. Finally, the part receives a vapor rinse from the boiling solvent.

The Products—The agent used in metal degreasing is a du Pont product, Triclene D, that contains a group of neutral stabilizers that resist deterioration. Another product, paint-grade Triclene, is the non-flammable thinner used in the painting process.

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Rough Surface Aids Bonding Between Dissimilar Metals

Cast iron is mechanically bonded to aluminum using the diecasting process.

Key to the bi-metallic interlock method is the rough surface of the as-cast iron insert.

■ The use of inserts has been a boon to the diecasting industry. Too often, the diecast metal is not able to meet strength, corrosion, and wear requirements. The insert provides these properties.

An example of this application is the aluminum engine block containing cast iron cylinder sleeves. Casting the light metal around the insert forms a unit which combines the best properties of each metal. The aluminum structure is light and has excellent heat transfer properties; the cast iron sleeve provides a wear resistant surface.

Now, a new and simple method of bonding cast iron to aluminum is on the scene. Developed by engineers of the Doehler-Jarvis division of National Lead Co., Toledo, this new bond is a mechanical interlock of the two metals.

Called the B.M.I. bond (bimetallic interlock bond), Doehler-Jarvis project engineers claim it has a high tensile strength and shear stress; the new bond is also able to withstand combined stresses, they report.

Need Tight Bonds—Some background information on inserts may be of interest. It is important that cast-in inserts be tightly held within the casting. Very often, these parts are held together only by the residual stresses which develop when the cooling metal shrinks onto the insert.

But what happens when the bimetallic unit encounters servere loading? What about high temperature uses?

High temperature applications are harmful because of the difference in coefficients of expansion of the two metals. For example, the value for aluminum is nearly twice that of iron. Therefore, as a casting is heated, the light metal expands at a faster rate than the insert. The residual stresses which hold the parts together are relieved.

Separation Occurs—The result is that heating causes separation between the two parts. And the bimetallic unit will no longer function as a single member. The effect is more pronounced with larger inserts since the expansion differential is a direct function of the size of the part.

Thus, it is obvious that a better means of securing the insert in the casting is necessary. For mechanical bonding, you can groove, spline, drill or undercut the insert in various ways to produce a suitable locking feature.

In contrast, the metallurgical bonding process is used in the various casting processes on a limited basis. It requires that an alloy be formed between the casting metal and a coating on the insert.

Take Special Care—This is easily done where tin, zinc, or cadmium is the coating metal. But with larger castings, special precautions must be taken to insure the formation of an alloy between the bonding metal and the casting metal. Otherwise, as Doehler-Jarvis engineers point out, the bond is not consistent or reliable.

Thus, in either mechanical or metallurgical bonding, machining or other processing is required to prepare the insert for casting. If these steps could be reduced or eliminated, large savings could be achieved.

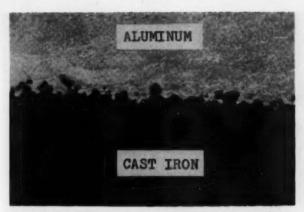
In working with cylinder sleeve castings made by the centrifugal process, it was determined that the outside diameter of the castings present an ideal mechanical bonding surface — a rough surface. Roughness is normal in this type of casting; it is considered a drawback and is usually removed by tumbling.

Roughness Is The Key—In this instance, the rough surface of these castings serves as the basis for a bonding process developed by the Doehler-Jarvis research and engineering group.

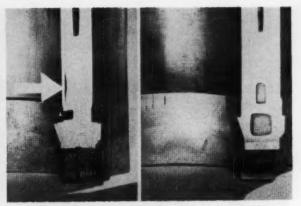
They find that, in preparing inserts, the only surface preparation required is the removal of the mold

Compare Strengths of Bonds

BOND	Strength, pel	Strongth, pel
METALLURGICAL	10,770	1,824
ROUGH, SEMI-INTERLOCKING	15,940	3,616
BI-METALLIC INTERLOCKING	19,070	7,140



FORMS A LOCK: Diecasting forces the aluminum into the undercut surfaces and forms an interlock with the rough as-cast iron insert. The bond obtained with this locking action is strong and ductile.



AVOIDS SHRINKAGE VOIDS: Molten metal can shrink away from a standard insert (left) as it cools. The B.M.I. bond (right) provides an interlocking action which prevents the formation of voids.

coating that remains on the outside diameter of the casting.

This is done by either sand blasting or immersion in a salt bath. The cleaning uncovers an irregular surface which is formed by a mass of small undercut protrusions and crevices.

Locks The Metals—In the diecasting process, the cast metal is forced into the passages of the undercut surface to produce an interlocking of the two metals. The bond obtained with this locking action is very strong and ductile.

Tests have shown that the mechanical properties of the new bond are far superior to that obtained with a metallurgical bond. In the latter bond, strength is dependent upon the formation of a thin, hard, intermetallic compound.

The coarse surface of the rough as-cast insert both ideally suits it to and restricts it to the discasting process. The low hydrostatic pressures, obtained in sand and permanent mold casting, will not fill the undercut voids to produce the required interlocking action.

Keeps Close Contact — "The B.M.I. bond proves beneficial from another standpoint. Due to the nature of the locking action, intimate contact is maintained between the two metals even at elevated temperatures. As a result, the heat

transfer properties of the bond are improved."

With the B.M.I. bonding surface, only one requirement must be fulfilled to obtain a high strength bond which has excellent thermal conductivity. The voids must be completely filled with the cast metal.

To achieve this, the cast metal must be forced into the voids under high pressure. And metal pressures normally obtained in the discasting process are sufficient.

Stands High Loads—"Perhaps the most outstanding feature of the B.M.I. bond is the fact that the bond can withstand high loads regardless of the direction in which they are applied. This is especially important for cylindrical inserts that are subjected to a combination of axial, radial, and torsional loads."

Typical cases are the cast iron inserts which form the wearing surfaces in aluminum engines and bimetallic brake drums. Because of the heat generated in these units, the light metal, with its higher coefficient of expansion, tends to pull away from the cast iron insert.

If there is no positive locking or bonding, it is necessary to depend upon residual stresses to maintain contact between casting and insert. At high temperatures, however, the residual stresses are relieved and the ability of the unit to withstand loads and dissipate heat will be impaired.

Holds Up At Temperature—With the B.M.I. bond, this problem is overcome. Doehler-Jarvis engineers claim that, even at very high temperatures, radial separation will not occur between the two metals.

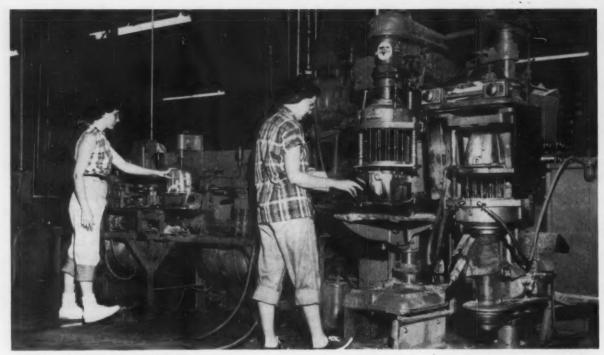
In addition to the reliability of the new bond in uses involving adverse service conditions, it also provides another benefit which is related to the casting operation.

In the casting of aluminum onto cylindrical inserts, the aluminum shrinks away from the insert in the heavier sections. This causes voids, which may prove harmful, depending on the end use of the casting.

In the case of the engine block, the voids can retard heat flow and cause hot spots in the sleeve. The developers of the B.M.I. bond state that the interlocking action prevents the formation of the voids. Thus, it overcomes a problem inherent in the casting process itself.

Has High Shear Strength—The results of some comparative tests show the shear strength of the B.M.I. bond to be about twice that of the metallurgical bond.

For that matter, the shear strength value approaches the value of the diecasting alloy itself. In many tests, failure did not occur through the bond, but in the aluminum structure next to the insert.



COMBINES TOOLS: As 10 holes are drilled in meter body, nearby multi-head 10-spindle press taps holes.

Press Setup Speeds Finishing

There are many cases where semi-automation is the best move you can make.

This foundry used multi-station presses to speed its finishing jobs.

■ Does it make sense to turn out raw castings in one plant, then ship them to another plant, remote from the foundry, for final finishing? It does if it means investing in a wide variety of metalworking equipment to get the final job done.

But a careful study of available tooling setups solved this problem at one aluminum diecasting plant. Engineers at Rockwell Mfg. Co., Russellville, Ky., came up with a design on drill presses to put the final touches on its valves, meters, and power tools.

By combining as many as a dozen operations into single work stations,

they are now able to perform jobs in one loading. The stations are so arranged that workers can load and unload one unit, while another unit is in automatic cycle.

This setup reduces labor costs to the point that final finishing can and is being done at the Kentucky plant site.

Gets New Name—The success of the new system has earned itself a nick-name, "low-cost automation." The title aptly suggests that very little manual handling takes place. All the presses are made by the company's Delta Power Tool Division.

The new setups consist mainly of standard press components and control devices. One of the simpler designs is an L-shaped row of six presses. Each one is equipped with special tooling to drill and tap 17 holes in valve plates at the rate of 151 parts per hour.

Boosts Output—In another setup, a four-spindle drill-press production line drills and taps holes in top and side of meter covers. Footoperated pneumatic feed devices control all four of these tools. The operator just loads and unloads.

Two of the spindles drill and tap four holes at 272 pieces per hour. Another spindle drills 12 holes while a second one taps 8 at the rate of 194 pieces per hour. Such methods as these permit Rockwell's machine group to finish castings in small lots.

More Meter Bodies — Still another tooling design now permits an output of 132 meter bodies per hour. In the first step, a 10-spindle upside drill press, pneumaticallyfed, drills 10 holes in a meter body.

At the same time, a nearby press taps holes in a piece that has already been drilled. Single foot pedals start up both jobs.



GRINDS AND STAMPS: Six-inch abrasive belt finishing machine grinds meter covers prior to stamping.



FOR MILLING TOOL: Simple tool setups are used for milling as well as for conventional drill-press runs.

Two Drill Presses — First, the meter body is clamped in a jig with a pneumatic plunger. By depressing the foot pedal, two horizontal drill presses tap holes in either side.

They then reverse, thereby clearing the piece. Lead screws, mounted on the holding fixture, guide the taps. This press is equipped with both pneumatic-spindle feed devices and reversing motors.

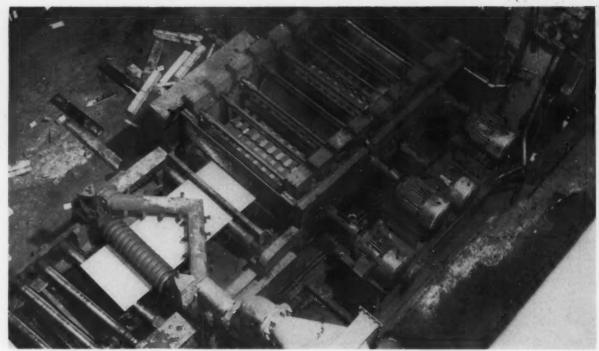
The company sets aside special machines for short-run work. Even though these units stand idle most of the time, Rockwell still feels that their low cost results in more economical runs. And because of their many uses, the units still out-produce individual tools.

On the Way — Although these new machine designs are paying off, management doesn't consider it the final answer. As soon as product volume increases, completely automated lines will be installed.

Current plans see a plant layout in which major castings will be conveyed from casting machines right into automated machines.



DRILLS AND TAPS: Four-spindle drill-press production line drills and taps holes in meter covers.



TAKES CARE OF SMUT: From exit end of blasting machine (right), sheets pass through brushing and then

under V-shaped centrifugal blow-off. Brushing cabinet has cover removed to show interior arrangement.

Post-Treatment Solves Problems In Work With Shot-Blast Stock

By Bram Pais—Superintendent, and E. S. Kelly—Asst. Superintendent, Metallurgical, Chemical & Welding Laboratories, The Budd Company, Detroit

Having trouble with shotblasted sheet and plate steel?

This analysis shows how to overcome most of the so-called problems that occur when taking on shot-blasting methods.

■ For metalworking plants switching to shot-blasted sheet and plate steel, there are bound to be new problems. Technical management can help the shop take such a changeover in stride.

The prime reason for the change is to cut raw material costs by eliminating such extras as pickling and oiling of steel stock. But production has to keep running smoothly and to this end regular maintenance is of first importance.

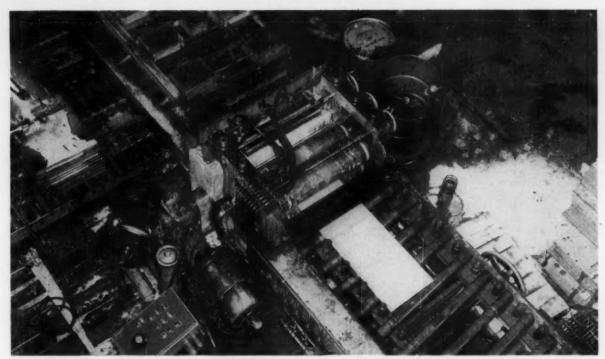
At The Budd Co., the so-called smut problem was readily overcome. Tool and die wear posed a temporary dilemma. Other troubles were due to unfamiliarity in changing to a new process.

How to Handle Smut—According to reports many plants have had a severe condition of smut left on the sheet. Proper shot size and shot hardness has a lot to do with it.

Being a finely divided scale, the smut is broken up until it becomes a powdery substance. In the Budd setup, this residue is carried away by the suction, separator and brushing system.

It's the size of shot that permits such treatment. The stock, ranging from 0.090 to 5% in. thickness, causes a wide variation in scale removal.

Break Heaviest Scale — Ideally you adjust the size of shot so that it just breaks the heaviest scale with a minimum of added surface roughness. Since you can't change shot



OIL, THEN STACK: Conveyor carries sheet into oiling and stacking unit. Oiling solves smut problem

caused in rolling and forming operations. Soluble cutting oil with a concentration of 20 pct can be used.

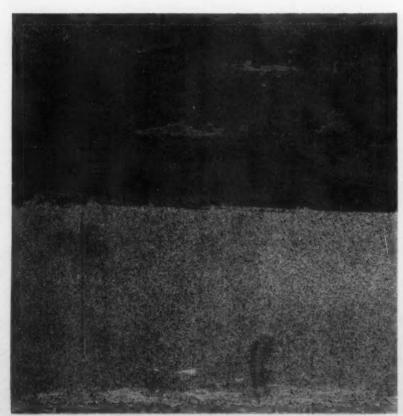
with every change of material thickness, you have to pick the largest size necessary.

The current choice at Budd is a cast steel grit equivalent to size 170 shot with a hardness range of 44 to 50 Rc. It has a microstructure of tempered martensite and bainite.

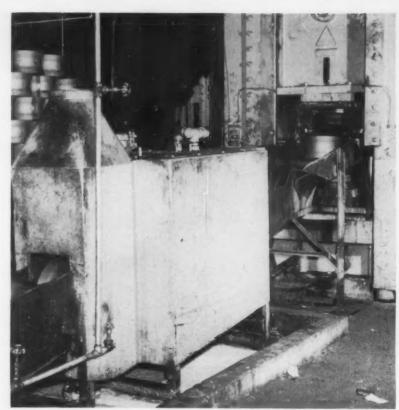
This is on the heavy side in comparison to some plants reported using a mixture of size 80 and 110 steel shot, which is generally used on lighter stock. With this fine mixture it's more difficult to sort the dust from the shot, and often leads to either a higher shot consumption, or an almost unavoidable smut problem.

Collect Dust—A number of steps other than the separators, cabinet suction, and final cabinet blow-off already provided as standard equipment on strip cleaners, can help minimize the smut residue. For one thing, additional air line blow-offs inside and outside the cabinet prevent any shot build-up on the steel.

Brushing equipment and another powerful blow-off work beyond the



FOR TOUGH FORMING: Phosphate-acid composition shows as dark portion. It has a bonding reaction that aids in forming of heavier stock.



POST-FORMING WASH: Residual scale which breaks loose in preforming die for passenger car wheel rim is removed in post-forming washing station.

cabinet. Thus the stock is thoroughly cleaned before reaching the oiler rolls and stacking.

A major source of smut, study shows, comes from using oily or wet steel. Condensation and weather conditions cause a good portion of the steel to come to the shot-blast operation with moisture on the surface.

Moisture Hurts—Such moisture increases smut residue instantly. So far, the above steps can cope with this increase. If necessary, Fuller's Earth can be added to the shot to absorb the oil or moisture, with the separators temporarily closed.

Another smut condition occurs after first formations or rolling operations. This is probably a result of small amounts of residual scale breaking away from the stock when the part is flexed or stretched.

Study of this condition in relation to succeeding processes suggested ways of meeting this problem. The method is to coat the plate or sheet after shot blasting. Of two different types of coatings, the choice depends on the major processing of the part.

Two Solutions—One material is a regular soluble cutting oil. Concentration is about 20 pct by volume. This does a good job in controlling scale smut for many mild press and forming operations.

On the other hand there are many tough forming operations on heavier stock. For these jobs a new type of coating of phosphate-acid composition is satisfactory.

The phosphate has a bonding reaction on the surface of the metal. Normally this chemical reaction is complete in about 4 hours from the time of application.

Added Benefits—Processing takes advantage of the lubricant in the material. Coated material stores well, too. In some cases steel held in storage for as long as four months was sent immediately into forming operations without any trouble. There seems to be no hardening.

One problem with the lubricant is control of thickness coating. Supplementary heating both in the tank and on the application rolls helps out.

Similar materials of less viscous nature can be applied by other methods. For instance, another Budd plant uses spraying, letting a set of rolls wipe off the excess. However, these lighter coatings are unsatisfactory for heavier forming operations.

How About Die Wear?—On first use of shot-blasted stock, one of the major shop complaints was excessive die wear. One remedy is to eliminate as much residual oxide as possible.

To do this on some rolling operations, Budd has been using conventional chlorinated emulsions both for preforming and postform cleaning.

On analyzing the die wear complaints, it turned out to be a question of hardness. Sometimes it was necessary to redress dies as much as three times per shift on some roll forming.

Check Hardness—In fact, for a time there was trouble keeping some presses going because of frequent die dressing. The situation in the shop is back to normal now.

It's due to use of proper coatings for various processes and maintenance of die hardness.

Another type of problem, at first, was from shot carried along with the sheet. This frequently happens when the shot-blasting machine is started with a sheet still in it and the brushes not adjusted properly. The piled-up shot is likely to be carried out into the succeeding oiling operation.

Now the production people are watching the brush adjustment carefully, making sure the shot is all removed. This is mainly a matter of education and familiarity with shot-blasting operations.

Spot Sheet Flaws in Fast Runs

Ultrasonics Searches Out Stamping-Quality Steel

Sheet steel, moving at high speeds, isn't easy to test. But ultrasonics can do it, even in production lines.

■ Too often in the automotive industry defective sheet is processed beyond the stamping stage. Later inspection uncovers laminations, but not before expensive production takes place.

To put an end to this unnecessary waste of equipment and man-hours, Chrysler Corp. installed an ultrasonic testing setup in its Nine Mile stamping plant in Detroit.

It's now possible to remove defective sheet from the line before it even gets to stamping. In this way, you can grade the metal for some other use.

Purple Dye — Using ultrasonic equipment, the setup includes a unique signalling device. As the unit detects a lamination of 1 in. or greater in the unwinding coil, it sprays the faulty section with a purple dye. Travel speeds can reach between 380 to 400 fpm.

The ultrasonic reflectoscope is a product of Sperry Products, Inc., Danbury, Conn. Practical spadework by Chrysler's E. A. Strohauer and Sperry's Brook Galloway helped tie the signalling device in with the ultrasonic unit.

Needs a Coupling—Since sound energy cannot be transmitted through air, a water-oil mix is used to pump feed the impulses to the transducer position. This results in a uniform coupling between the transducer itself and the moving sheet.

The water-oil mix also permits inspection of the entire sheet width through the angulation of the transducer. This is done by a beam, reflected from the top to the bottom surface as it crosses the sheet.

The new setup does away with special inspection areas, immersion tanks, and handling equipment. It's inserted right in the production line between the feed rolls and the stamping press.

In the Console—A control console houses the reflectoscope and signal devices. A photoelectric plate sensing device controls the amount of mix. Among the other parts in the unit are a couplant tank, a recirculating pump and controls, a transformer to regulate voltage, and circuits to eliminate interference.

What is Ultrasonics — A pulse generator sends packets of high-frequency energy into the material at regular intervals. Then a transducer or search unit converts it from

electric to acoustic energy.

As soon as the acoustic energy is coupled into the workpiece, it transforms right back into electrical energy again. An amplifier picks up this returning signal and transmits it visually on a cathode-ray tube.

For Welding—In some circles it's felt that ultrasonic waves may soon probe into the interiors of spot welds. In fact, a method is now under test that would accept or reject 300 spot welds every 4½ seconds.

There are about 3500 welds in a modern car body. To the eye, all welds look sound. But destructive tests, the current method of weld detection, often tell another tale. Unfortunately, these tests not only consume time, but they are very costly.



SEARCHES OUT FLAWS: The sound wave scanner sprays faulty spots in steel with a purple dye. Defective sheet never reaches stamping.

Combine Plastics and Metals For Better Products

There are many areas where laminates are improving the traits of aluminum, copper, and steel.

Case histories prove they do their job well.

■ Look around. Plastics are making in-roads at every turn. They're combining with metals to do jobs that neither material can do alone. In the fields of electronics, aircraft, machinery, textiles, and tin plating, laminates are being combined with steel, aluminum, and copper. And the result: a third material, the answer to many problems.

This combination of such diverse

materials opens broad new avenues of use. As each plastic laminate combines with a metal, it cuts down on the overall weight. And it also makes use of the best properties of both materials.

This, in turn, reduces the amount of critical or precious metals needed and eases fabrication. By nature, thermosetting laminates are well suited for combined use with metals to effect this third material.

For Printed Circuits—Perhaps the greatest use of plastic-plus-metal structures is in the field of printed circuits. Laminated plastics are available with rolled copper foil in 0.00135 and 0.0094 in. thicknesses. However, several factors govern the

selection of the proper laminate grade.

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Your choice will be based on lowloss insulation, mechanical strength, moisture resistance, heat resistance, and ease of fabrication. Generally, paper-base grade XXXP, with its good punching qualities and low dielectric losses, will do the trick.

At times, other grades, like XP, XXP, LE, G-5, G-10, and G-11, will do well. Synthane Corp., Oaks, Pa., has a special grade, P-25, that can be cold punched.

Such a trait in this paper-base products rids the distortion and shrinkage problems you find in hot punching. The same company also has an adhesive with electrical properties equal to the base laminate.

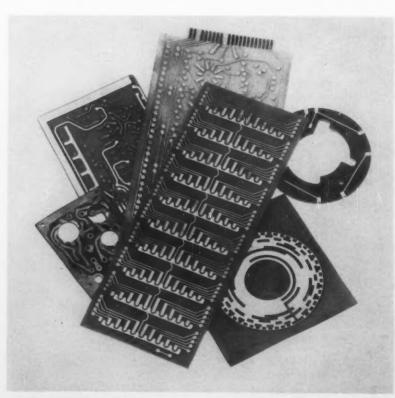
Tin-Plating Rolls — Recently, a tin-plating mill grew weary of the endless maintenance needed to keep its rubber-covered rolls in operation. But to change to another material for the rolls made the problem seem even darker. Each roll in the line required a different surface hardness.

A consulting company, Steel Plant Equipment Corp., Norristown, Pa., found a way out. It worked with Synthane engineers to see if plastics could offer a solution.

Before long, an answer was found. Now that they're running, it's evident that the laminate-covered rolls last more than three times as long as the old rolls.

Take High Speeds—These rolls are used in electrolytic tin plating of steel strip. As a team, they control a 42-in. wide continuous strip of steel. And this same strip undergoes pickling, plating, and polishing while moving at speeds up to 4100 fpm.

The plating rolls in this setup consist of steel cores covered with



PRINTED CIRCUITS: Synthane laminated plastics with copper foil bonding are used for printed circuit boards in the electronics field.

cotton or glass-fabric reinforcement impregnated with several types of resins. Just what fabric and resin you should use depends on the requirements of the roll itself.

Other Rolls Too—For example, bridle rolls, the ones that prevent the sheet from buckling as it uncoils, put up with much abrasion. Hold-down rolls are exposed to sulphuric acid. Here, the laminate also insulates the roll from electric current. This prevents any electrolytic deposition of tin.

Compared to the old rolls, the laminates are denser. This trait helps maintain smooth surfaces on the plate. The plastics keep foreign matter from embedding in the roll.

Because of plastics' resilience, foreign matter may embed itself on a roll covering. But it won't scratch, score, or otherwise damage the roll. No particles or "shavings" come from laminates.

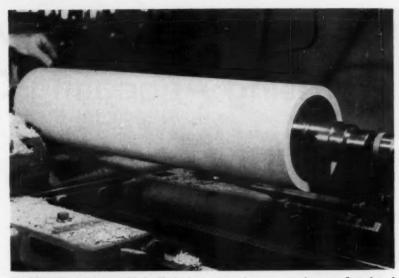
But rubber, due to abrasion, will deposit particles in or on the metal. And this insulates against the plating of the strip.

Softer Landings — The aircraft industry is combining a fabric-base phenolic laminate with a 2024 aluminum tube. This bond forms a hydraulic piston head in shock struts. The head absorbs that first impact whenever planes make contact with the ground.

The main reason for using this bond is to prevent metal-to-metal contact between the head and the cylinder. And there's no more scoring of cylinder walls. Impurities in the fluid don't interfere with the laminated plastic.

Reduce Sizes — Ball-bearing retainers of plastic laminates alone have long served a basic need. Recently, though, design engineers have combined laminates with sheet aluminum to reduce sizes many-fold.

Engineers wanted to reduce the width of the bearing. In doing that, there would be a reduction in the width of the separator on the bearing edges. And the latter would only weaken the section between the separator's pocket and face. Of course, this wasn't practical.



IN THE PLATING MILL: Eight-hour cure in an oven insures firm bond with the metal. Plastic-covered steel roll is used in a plating mill.

So Synthane engineers suggested the use of 0.015-in. thick aluminum cladding. They felt this would increase strength and add support for the riveting to follow. And it did.

Successful Clutch—Metal inserts and bushings are used with molded-macerated and molded-laminated plastics for added strength. You can trace much of the success of the high-speed reversing clutch to laminated plastics. To pick up lost time in reversing movements, engineers designed an automatic screw-machine clutch.

The movable clutch cone, made from molded phenolic plastic, answers all the needs of high-speed clutch operations. It's light, strong, and resists heat well. The cone holds its own even during high-speed temperature runs up to 250°F. No distortion. No erosion.

Even Potato Chips—There are many other examples too. Take the potato chip maker that covers its steel salt-spreading roller with laminates to protect it against corrosion.

And many textile companies are covering their pressure rolls with laminated plastics. Aside from being strong, smooth, and clean, plastic materials resist that bugaboo, chemical attack.

The insulating properties of plastics are also put to good use in the electrical industry as covers for copper busses and cadium-plated steel switch bars.

Formed from Layers—As noted before, only thermosetting plastics can be used in many of these combinations. Unlike the thermoplastic grades, they are cured by applying heat and pressure.

Once cured, they cannot be resoftened by further heat and pressure. At the start, these plastics consist of layers of fabric or paper impregnated with a synthetic resin.

As soon as heat and pressure are applied to these layers or laminations, final polymerization takes place. This transforms the layers into a solid mass. The structure then reaches its final state — no longer fusible or soluble.

Take Your Choice—Combination laminates are generally available in sheet, rod, and tube forms. In sheet stock, the plastic may be on either side, or between layers, of the metal.

Bonding is usually done with adhesives, and sometimes with mechanical fasteners. In tubes and rods, the laminate generally wraps around the metal.

There are certainly enough plastic grades to choose from. Synthane Corp. offers 35 basic laminates, plus countless variations to meet special needs.

Radiant Heating: An Answer To Rising Annealing Costs

By R. J. Gianotti-Production Superintendent, Tube Mill, Wallingford Steel Co., Wallingford, Conn.

A seven - barrel - furnace line, for tube annealing, features special burners.

Here's how fast, uniform radiant heating does the job at reduced production costs.

■ A controlled, fast-heating method for annealing stainless steel tubing is pointing the way to lower costs for tube producers. Wallingford Steel Co., Wallingford, Conn., for example, is realizing costs up to 25 pct below other production methods.

A seven-barrel-furnace line for tube annealing is the answer. Designed and built by Selas Corp., Dresher, Pa., it is equipped with charge and discharge tables and a quench spray system.

Deliver Radiant Heat—A unique feature of this line is the placing of special direct-fired burners around each barrel furnace close to the tubing being processed. These burners deliver radiant heat uniformly and at high heat release. And, there is no flame impingement on work.

This method of firing provides flexibility with regard to atmosphere. It allows the production of low carbon grades of stainless steel tubing without danger of surface carburization. The simplicity of the annealing operation is of special interest, in view of the many production benefits it is providing.

First, steel strip is shaped into tubing, welded, ground, cold drawn and cut to length. It is then transported to the loading table of the annealing furnace line. This line handles tubing from ½ - 65%-in. OD. Wall thicknesses range from 0.020 - 0.3125 in. And it can proccess seven strands simultaneously.

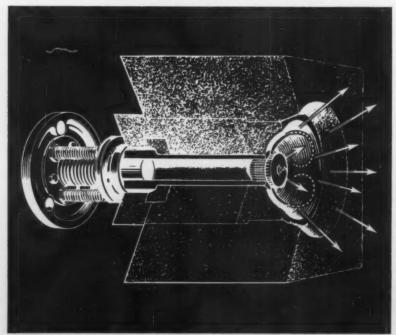
Heats Tubing Quickly—The tubing rolls down a pay-off rack at the leading table onto a continuously moving conveyor, which carries it into the barrel-furnace line. Exposure to radiant heat in the first three barrels of the line rapidly brings the tubing up to heat. This temperature ranges from 1450° - 2150° F, depending on the metal composition and wall thickness.

Panel mounted instruments are used to automatically record and control required temperatures in each of the first three and seventh furnaces. Different temperature settings are made with a simple adjustment of the set point in the temperature-control instrumentation. The burners respond quickly to controller demand.

After reaching the desired temperature in the first three furnaces, the tubing continues on into the fourth, fifth, and sixth furnaces, where it is held at temperature. The operator double-checks the temperature of the tubes, at this stage, with an optical pyrometer.

What about final heat equalization? This is done in the seventh furnace where we set and hold the temperature at about 50° above that of the first three. As the tubing

Here's How Burner Works



BURNS ON CUP SURFACE: Gas-air mixture enters tube, moves to burner tip, passes through tip and burns radially on refractory cup.

emerges from the last barrel, the tubing is water-spray quenched.

Design For Efficiency — The seven-barrel furnace line was designed to be coordinated with the other tube processing operations. Rigid time and temperature schedules for each type and size tubing are followed. In this manner, production speed is realized and outstanding economies result.

For example, we anneal Type 304 stainless steel tubing, 2 in. OD x 0.065 in. wall, at 2000°F. It is timed to travel through the seven-barrel-furnace line at a constant, controlled speed. Heavier tubing, such as 0.840 in. OD x 0.109 in. wall, also annealed at 2000°F, travels through the furnace line at a 20 pct slower speed.

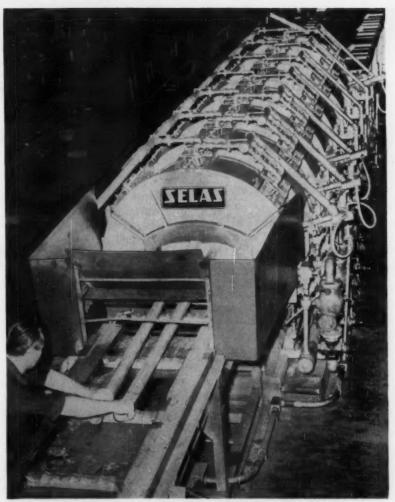
How about other types of tubing which require different annealing temperatures? Type 430 stainless, for example, is annealed at 1450°F. Tubing of this material is usually annealed the first thing Monday morning while the furnace is being brought back up to temperature. (The furnace is idled over weekends, using propane gas.)

Save Many Hours — After the first few loads of low-temperature-annealed tubing have been run through the line, it requires only 30-45 minutes to bring the furnace back up to high temperatures for processing the heavier loads of tubing. These quick start-ups save many valuable production hours each month.

The radiant burners make possible close temperature control and speed of heating. They are designed with specially shaped refractory surfaces.

When closely controlled gas-air mixtures are burned against these ceramic surfaces, they become incandescent and beam radiant heat to the tubing. The wide throttling range of the burners provides unusual flexibility in meeting the critical heat input requirements.

Use Special Controller — The maximum combustion efficiency which is being achieved is attrib-



ALIGN BEFORE HEATING: Operator makes sure that tubing is correctly aligned as conveyor carries it into seven-barrel furnace line.

uted to a Selas combustion controller. This unit, the heart of the combustion system, consists essentially of two major sub-assemblies: an adjustable-port mixing valve and a motor-driven compressor.

The mixing valve provides for the proper mixture of fuel gas and air over the entire range of capacity. The compressor provides the required capacity at a constant pressure

In operation, the combustion controller takes natural gas (or propane for idling the furnace over weekends) from the low pressure plant line, and draws air from the room. It then mixes the two in precise ratios, and compresses the mixture to several pounds pressure for delivery to the burners. The result is faster reaction, faster burning, and higher temperatures.

Gives Fuel Economy—This combination of radiant firing and precise combustion control adds a substantial fuel economy, as well as annealing speed, to a production operation.

There is still another saving note. The compactness of the furnace line permits it to be fitted into a limited space.

Most important, however, these savings are being achieved with a furnace line that assures reproducible uniformity of heating along the entire length and around the circumference of each tube — from tube to tube.

Tapered Dies Speed Bend Tests

Single Setup Checks Sheet at Any Temperature

You don't have to change dies for every sheet-metal test.

A single set of tapered dies can do the same work at less cost.

Press brake tests have undergone some streamlining lately. These same tests are widely used to judge quality of sheet metal and to set up minimum bend radii. As a result, brake tests should become more useful in predicting bend-forming traits on a production basis.

The new testing procedure makes use of a single pair of tapered dies, replacing the large number formerly required. This lowers the cost per test. Also, it means you can run more tests than ever before.

You can apply the procedures to

all sheet materials. And you can conduct the tapered-die tests at sub-zero as well as elevated temperatures.

Tapered Designs — As designed by Titanium Metals Corp. of America, New York, the male die is 48 in. long and varies continuously from 0.020 to 0.850 in.

The female die has a minimum opening of 0.190 in, that increases to 2.53 in, throughout its 68-in, length. Shoulders of the female die have a constant radius of 0.25 in.

As such, you can now bend 0.010-in. sheet to a minimum radius of 0.020 in. You can also bend a 0.085-in. sheet around a maximum radius of 0.85 in. Intermediate gages can be bent to any radius between these two extremes.

Provide Clearance — To provide

reasonable clearances between the test material and the dies, TMCA engineers chose a female die opening equal to twice the male radius plus two and one-half times the sheet thickness.

The test procedure consists of positioning a specimen on the die, then actuating the press brake clutch. Depth of stroke is set to produce a bend angle of 90° after springback.

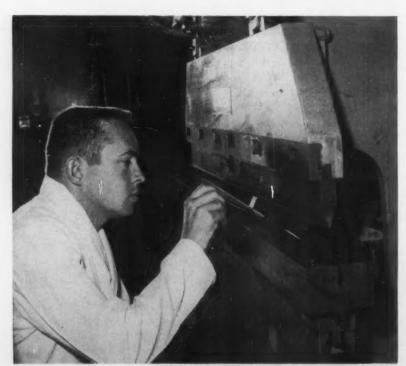
You examine the specimen for cracks as soon as the stroke is completed. Use a low-power microscope if needed. Once you locate the critical radius, bend the other specimen above and below this point. In this way, you can bracket the minimum bend radius position.

Measure the Radius—Then, using a radius gage, measure bent specimens at a point on the tapered radius. This should be done in about three to five times the sheet thickness from the smaller bend radius edge.

Such a point represents the most severe combination of lateral restraint and near maximum longitudinal strain. If you want to achieve a biaxial stress state with lateral restraint, use specimen widths 10 to 15 times the sheet thickness.

Keep It Warm—In elevated temperature tests, wrap the specimen in one layer of thin asbestos paper, heated to the desired temperature. Finally, test the specimen in the press brake while it's still encased in the asbestos.

When the heating furnace is positioned next to the press brake, temperatures decrease from 800° to 740°F. They drop from 1000° to 930°F during transfer operations.

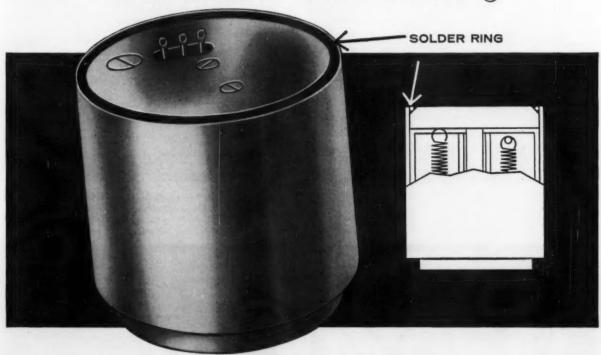


EASES TESTING: Single pair of tapered dies helps guide production. Same die setup is used, thereby speeding press-brake tests on sheet.



Precision soldering 7 Times Faster...

with TOCCO* Induction Heating



When G. M. Giannini and Co., Inc., Pasadena, California, switched from old-fashioned methods to TOCCO Induction Heating they increased production of these high-precision accelerometers from 4 to 30 per hour—with a commensurate decrease in production costs.

Here's what a Giannini official has to say about the TOCCO installation: "Prior to using TOCCO for this purpose, we had tried soldering irons, normal torches, resistance sealing, and even threaded screw fittings, with uniformly poor results. Essentially, the TOCCO unit has permitted us to build, in production quantities, oil-filled hermetically sealed units that could not be produced in any other way."

Whether your production bottleneck involves soldering, brazing, heat treating or heating for forming it pays you to investigate TOCCO as an economical way to do it better, faster and at lower cost.



THE OHIO CRANKSHAFT COMPANY

Mail Coupo	Today- NEV	V FREE Bulletin
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The Ohio Crankshaft Co. • Dept. A-11, Cleveland 5, Ohio Please send copy of "Typical Results of TOCCO Induction Brazing and Soldering".

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Where precision is important...

use USS Amerstrip, the "quality-

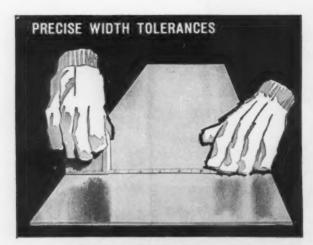
USS Amerstrip is a specialty product, rolled in quantities that permits production on precision machines, tailored to the customer's product specifications. When you use USS Amerstrip you get seven important "quality controls" not obtainable with other manufacturing methods.



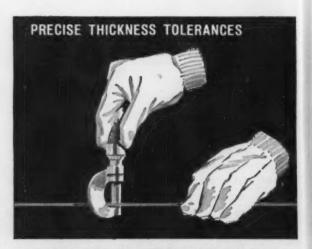
The finish you get on your Amerstrip order has been specially prepared to meet *your* product's needs.

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If your fabricating machines require a special width strip that's just what you'll get with Amerstrip. USS Amerstrip can be produced in any width under 24 inches... well within exacting tolerance limits.

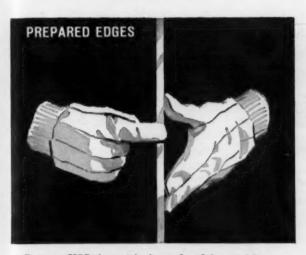


USS Amerstrip can be supplied in the thickness your machines demand. USS Amerstrip is fabricated on large production runs down to thickness tolerances as close as plus or minus .0005 inches.

American Steel & Wire representatives are experts in the fabrication and application of USS Amerstrip Cold Rolled Strip. Whenever you have a need or problem involving cold roll let these experts show you how USS Amerstrip can do it better. Get in touch with our nearest representative or write to American Steel & Wire, Dept. 9354, 614 Superior Ave., N.W., Cleveland 13, Ohio.

USS and Amerstrip are registered trademarks

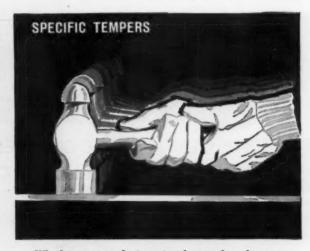
controlled "cold rolled strip steel



Because USS Amerstrip is produced in precision, order-size quantities, it can be supplied with the edge finish you need...square, standard, round, full round or bevel.



Whatever the size of your order... very large or very small, every coil of USS Amerstrip will be uniform in finish, in temper, in width and thickness. The use of USS Amerstrip will assure continuous production and high yields.



Whether your product must undergo a deep draw or other severe forming operation or require a special temper for rigidity, you'll get the exact temper you need when you order USS Amerstrip.

DESIGNED FOR END USE

This is really the sum total of all these other advantages. Because USS Amerstrip is "Quality-Controlled," because it is engineered to meet your needs, it assures you smoother, faster operation; a better, more salable finished product.



American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors United States Steel Export Company, New York

New Catalogues and Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 111.



ONE GLASS-JET PROCESS PEENS, CLEANS, FINISHES and CUTS COSTS

Perfecto-Peening is a revolutionary new process of glass-jet peening using minute treated glass beads in a slurry solution... goes far beyond conventional peening. Perfecto-Peening not only cold works, stress relieves and increases fatigue life, it also cleans and improves metal surfaces down to fine finishes in its processes. Masking is never required down to and including a fine finish. No surface contamination, no imbedment, no residue. Removes flash, hinged and feather burrs, yet won't alter critical b/p dimensions even on delicate precision parts. Hundreds of peening, cleaning and finishing applications at reduced costs. Write or call us about your peening requirements and send a sample if you can.

FEATURES

- Reduces cost of peening, cleaning and finishing.
- Cold works, stress relieves and increases fatigue life...iron, steel, aluminum, magnesium, titanium, brass, copper, special alloys, etc.
- Cleans and improves metal surfaces down to fine finishes, no masking required to and including these finishes. No imbedment, contamination, residue.
- Improves bonding surfaces, seals pores to reduce corrosion, prepares finishes for plating.
- Removes flash, hinged and feather burrs
 ... dimensional stability maintained.

Write or call us about your peening requirements and send a sample if you can.





MODEL A-50

Welded SS construction...can accommodate long parts...operates on 110-v 60-cycle a-c and air pressure 120 psi/50 cu. ft. minimum...standard connections...no pump required, has sump to contain glass bead slurry solution, feed system powered by an air compressor to a nozzle (gun) unit... write for descriptive bulletin.

Bright Nickel Solution

An acidic solution used to produce brilliant finishes on solid nickel or electrodeposited nickel and some nickel alloys is fully described in a two-page data sheet. (MacDermid Inc.)

For more data circle No. 1 on postcard, p. 111

Hydraulic Press Brakes

A 16-page catalog describes a line of hydraulic press brakes. Specifications are included on models ranging in capacity from 150 to 1800 tons, plus information on design details and photographs of typical models. (Verson Allsteel Press Co.)

For more data circle No. 2 on postcard, p. 111

Safety Switches

A bulletin describes a new line of electric safety switches. Coming in 30- and 60-amp, 250- and 600-v ratings, they fail safe and incorporate a number of other safety features and rugged construction for dependable operation. (Clark Controller Co.)

For more data circle No. 3 on postcard, p. 111

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Power and Heating Unit

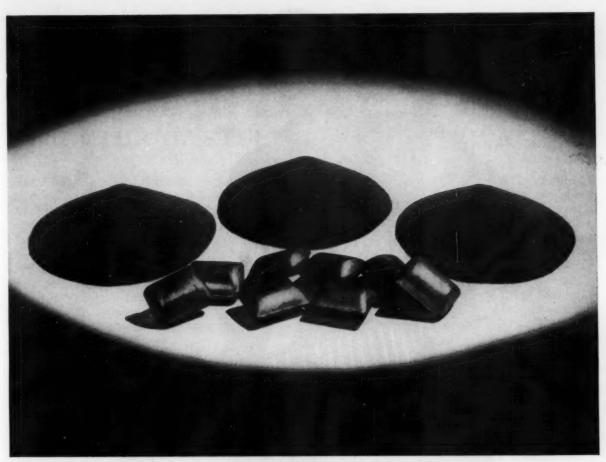
A three-page power and heating unit with all-wet-back construction is described and illustrated in a bulletin. It can be built in sizes up to 900 hp. (Titusville Iron Works Div. of Struthers Wells Corp.)

For more data circle No. 4 on postcard, p. 111

Melting, Heating

Equipment for melting and heating metal is featured in an eight-page bulletin. This equipment, it states, combines advantages of induction heating with economies of precision control. (Inductotherm Corp.)

For more data circle No. 5 on postcard, p. 111



Sherritt High-Purity Nickel is available in handy briquettes $(1\frac{1}{4}" \times 1\frac{1}{2}" \times \frac{5}{6}")$ and in three grades of powder—Grade C (coarse), Grade F (fine), and Grade S (medium).

Nickel as you like it...in purity, in handling ease, and in alloying efficiencies. Sherritt's unique hydrometallurgical refining process yields nickel powders with a guaranteed purity of better than 99.8%. Available in briquettes and in three grades of powder, Sherritt nickel takes all prizes for handling ease. There are no strips to cut, no unwieldy plates to handle. Alloying is quicker and less troublesome. By disintegrating into smaller agglomerates, Sherritt powders and briquettes go into solution more rapidly with less chilling. This low-chilling property permits alloying additions even at the end of the heat. Sherritt also offers special grades and coated powders.

nickel as you like it



FOOTE MINERAL COMPANY is the exclusive sales agent for Sherritt nickel and cobalt in the United States and Canada. For product literature, prices, and delivery information, contact the Foote Mineral Company, 438 S Eighteen West Chelten Building, Philadelphia 44, Pa.

SHERRITT GORDON MINES LIMITED



The Image of CF&I...

maker of CLAYMONT STRUCTURAL STEEL PLATE FABRICATIONS

This Image—a giant steelman—reflects CF&I's experience as a top-ranking primary producer of quality steels as well as CF&I's versatility as a fabricator of steel plate structurals.

Examples of the CF&I-Claymont line of structural plate fabrications are: all-welded structural sections, bearing assemblies, base and tie plates, truss and strut footings, wedges, gussets and straps. Claymont's completely modern Fabrications Shop is equipped to turn out these fabrications in all shapes, sizes and gages, from carbon, alloy or stainless-clad plates.

Welded steel girders up to 160 feet in length and nine feet in depth at their pier ends, weighing some 40 tons each, were produced by Claymont's Fabrications Shop for bridges at Schuylerville, New York...to mention a recent example. Massive CF&I-Claymont welded steel plate sections were also supplied for the Mianus River Bridge crossing of the Connecticut Turnpike.

For complete information on CF&I-Claymont Structural Steel Plate Fabrications, contact the CF&I sales office nearest you.

CF&I-CLAYMONT PRODUCTS: Carbon Steel Plates • Alloy Steel Plates • CF&I Lectro-Clad Nickel Plated Steel Plates • Clay-Loy High Strength Low Alloy Plates • Flanged and Dished Heads • Manhole Fittings and Covers • Fabricated Steel Plate Products • Large Diameter API Pipe

Claymont Steel Products

THE COLORADO FUEL AND IRON CORPORATION S

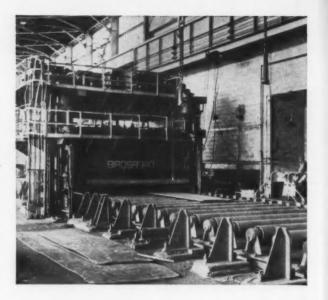


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Lukens Steel meets demand for "dead flat" plate with new BIRDSBORD leveler

• More and more steel plate orders now require closer tolerances than ever before. To meet this need at Lukens Steel, two roll plate levelers, including the 200" unit pictured here, have resulted in substantial increases in production. Both units were designed and built by BIRDSBORO and turn out "dead flats" under remote control by a single operator and helper. Your BIRDSBORO representative can give you full particulars on any similar unit. Sales Department, Engineering Department and Mfg. Plant: Birdsboro, Pa., District Office: Pittsburgh, Pa.





BIRDSBORD STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

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FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Turret Drills

A 12-page brochure describes two models of an automatic hydraulic turret drill, one with six spindles, the other eight. Their drill capacities in mild steel are ¾ and 1½ in., respectively. Quick setup, simple controls, and completely automatic operation are stressed. These machines are available in models with tape control for operation and table positioning. (Burg Tool Mfg. Co., Inc.)

For free copy circle No. 21 on postcard

New Tool Steel

A 12-page illustrated bulletin describes a high-carbon, high-chrome, air- and oil-hardening tool steel. Called "Tri-Tung," it is capable of great hardness, excellent wear-resistance, and minimum distortion with air-hardening. Its characteristics, use, machining, and treatment are described. (The Uddeholm Co. of America)

For free copy circle No. 22 on postcard

Industrial Trucks

An eight-page condensed guide covers a complete line of industrial trucks, and attachments, for all types of material handling. (Hyster Co.)

For free copy circle No. 23 on postcard

Tape-Controlled Miller

A 28-page circular covers construction and operational features of a line of tape-controlled milling machines for automatic continuouspath milling of regular and irregular contours. Case histories presenting a number of very interesting applications to quite difficult jobs are included. Contour milling of threedimensional jobs is possible with these machines. (Pratt & Whitney)

For free copy circle No. 24 on postcard

Use of Cutting Fluids

"Metal Machining with Cutting Fluids" is an attractive, thoroughly illustrated, 115-page book presenting all the basic facts on the subject. Functions, types, uses, and handling of cutting fluids are all covered in detail. In addition, pertinent information is included on tools, machinability of materials, and all the various machining operations in which cutting fluids might be used. It should prove a valuable reference source to anyone. (Gulf Oil Co.)

For free copy circle No. 25 on postcard

Continuous Heat-Treat

A 16-page bulletin describes a company's lines for continuous plate and bar heat treating. They consist of automatic, high-output hardening furnaces, pressure quenches, and tempering furnaces for processing wide plate and large bar steel. (Drever Co.)

For free copy circle No. 26 on postcard

Hot Heading

An eight-page brochure explains that metal in the hot condition can be displaced to a greater degree than by cold heading. The author company points out that it can furnish unlimited lengths in bolts, wider diameter ranges, and greater upsets. The brochure also shows where production runs with hot heading are, under certain conditions, more economical with low-cost tooling and material savings. (The H. M. Harper Co.)

For free copy circle No. 27 on postcard

Molding Facilities

A four-page brochure describes a company's facilities for dry-sand, machine, and loam molding, for making patterns and doing machine Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted, 11/5/59

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FREE LITERATURE

work on castings and other components, and producing gray-iron and ductile - iron castings. (Kutztown Foundry & Machine Corp.)

For free copy circle No. 28 on postcard

Stock Straightener

A four-page folder details a new portable stock straightener. It removes coil set, straightens blanked parts, deburrs stock, facilitates hand feeding, and has variable speed to match operation of automatic presses and other machines with which it may be used. (Dickerman Mfg. Co.)

For free copy circle No. 29 on postcard

Multi-Spindle Machines

A brochure covers a newly introduced line of multiple-spindle precision boring, drilling, and tapping machines designed for complex production operations on nonferrous parts. They use gearless workheads to permit close center distances. Workheads are interchangeable, and are built up for individual jobs at low cost. (Sundstrand Corp.)

For free copy circle No. 20 on postcard

Lithium Data

An eight-page engineering bulletin presents helpful basic data on lithium. Its physical and chemical properties, common alloys, and applications are covered in detail. (Foote Mineral Co.)

For free copy circle No. 31 on postcard

Circuit Breakers

A revised version of a company's "Interrupting Capacity Chart" enables users of circuit breakers to select and order the proper breaker for each application. (Westinghouse Electric Corp.)

For free copy circle No. 32 on postcard

Automatic Boring Mills

A two-page bulletin describes automatic positioning systems for a line of horizontal boring, drilling, and milling machines. Independent of the feed mechanism, the system uses program bars, blocks, or end measures. Users can lay out holes directly from prints. (The Cincinnati Gilbert Machine Tool Co.)

For free copy circle No. 33 on postcard

Platinum Products

A 20-page catalog outlines a company's standard line of platinum products and chemicals, and its recovery and refining facilities, as well as information on clads and composites of platinum-group metals with base metals. (J. Bishop & Co.)

For free copy circle No. 34 on postcard

Machining Ball Parts

Available as company literature, a reprint of a three-page article from The IRON AGE describes a new two-machine process for producing precision ball-type parts. One unit turns the ball, and the other finishes it. (Micromatic Hone Corp.)

For free copy circle No. 35 on postcard

Motor Controls

A 162-page digest gives full information on a complete line of motor controls, including starters, controllers, and pilot devices. (Write on letterhead to Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.)

Welding-Wire Guide

A handy 84-page booklet details a complete line of gas-shielded metal-arc welding wires of all materials used with a company's automatic welding process. All pertinent technical information is included. (Air Reduction Co., Inc.)

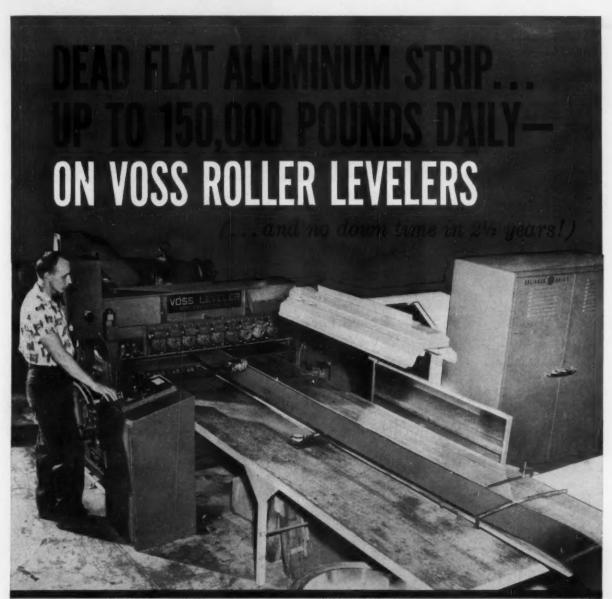
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For free copy circle No. 36 on pestcard

Plastic Moldings

A four-page catalog outlines a company's custom plastic molding services. A line of molded products is described, and typical products are illustrated. Design advantages of plastic are discussed. (The Richardson Co.)

For free copy circle No. 37 on postcard



One of two Voss Levelers in operation at the Lancaster, Pa., plant of Quaker State Metals Co.

Ask Quaker State Metals Company, a leading supplier of aluminum to siding manufacturers. Quaker State puts all their aluminum siding stock through Voss Levelers, because only Voss gives them the absolute flatness their customers demand.

Quaker State's first Voss Leveler was installed 2½ years ago, the second one a year later. Both have withstood long periods of 24-hour operation, leveling up to 75,000 lbs. per machine daily . . . with no downtime since installation!

Voss Levelers will solve almost any leveling problem . . . at high production speeds. Patented features make possible accuracy and flatness unheard of with any other leveler, equalling or exceeding stretcher-level flatness in many cases. Voss Levelers are now in use in steel, aluminum and other non-ferrous plants, in applications ranging from heavy plate to cold-rolled strip, galvanizing lines, aluminum sheets and many others. Let Voss put its years of experience to work for you. Call or Write today.

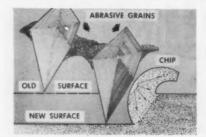
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New Materials and Components



Solid Lubricant Improves Grinding Efficiency

Grinding wheels dipped in a solid lubricant are impregnated with a parting medium. It retards loading by preventing metal chips from gripping the wheel. It also acts as a dry coolant. Users report burnand burr-free grinding of HSS for

the first time. Dressings are less frequent, and wheels last longer although grinding is faster. Finishes are improved. A single dressing usually lasts the life of the wheel (King Graphite Products, Inc.)

For more data circle No. 37 on postcard, p. 111



Cored Forging Cuts Stanchion Socket Costs

Use of cored forgings to replace a conventional assembly of cast parts and tubing reduces the number of parts to fabricate a stanchion socket from seven to three. Previously, the socket had been assembled from a cast base, a piece of tubing, and three rivets, involving seven operations. The cast part requires only polishing and plating. Savings also result in the socket cap and the web fitting over the end. (Bridgeport Brass Co.)

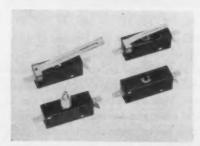
For more data circle No. 38 on postcard, p. 111



Hydraulic Feed Units Automate Drill Presses

Self - contained hydraulic drillpress feeds permit automation of older type large drill presses with capacities up to 1½ in. in steel, for high-production drilling and allied work. The unit consists of a heavyduty power transmission arm and a control console. Approach, entry, work, and return speeds are all separately and infinitely adjustable. Depth control is precise and reliable. There are two sizes. (Beckett-Harcum Co., Inc.)

For more data circle No. 39 on postcard, p. 111



Three Models of Snap-Action Switches

New snap-action switches come in pin-plunger, lever-action, and panel-mounting models. Featuring positive make - and - break action, they are insensitive to vibration and shock, and have oversize contacts that provide stability against momentary high overload. The pinplunger type is for limit, interlocking, and control uses with limited overtravel. The lever-action types suit low operating forces. (Controls Co. of America)

For more data circle No. 40 on postcard, p. 111

Tensile

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Tensile

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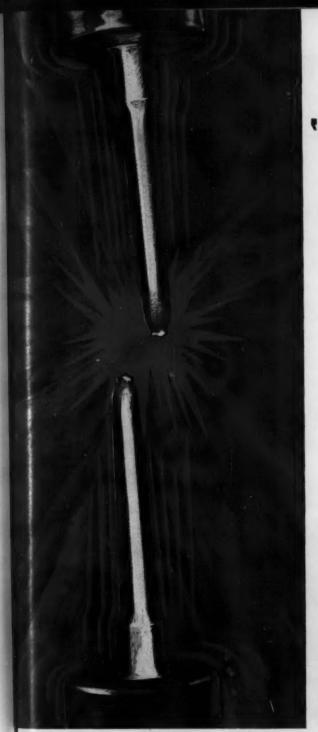


Time-Delay Relay Is Accurate in All Uses

An electronic time-delay relay, infinitely variable over a range from 10 milliseconds to 5 minutes, provides high accuracy and repeatability for control of all automated industrial processes. Independent of input voltage fluctuations, it offers

instantaneous response and recycling. Transistorized construction makes it insensitive to ambient temperature effects. It rates 24 to 130 v, ac or dc. (Syracuse Electronics Corp.)

For more data circle No. 41 on postcard, p. 111



"How Jessop **Stretches Specialty Steels**"

Robert Timko, Metallurgist

"At Jessop, tensile testing of specialty steels is carried out with far more than ordinary precision. It pays. It's one of the reasons our repeat business is so high.

"Based on a series of photographs, this drawing shows a specimen of type 304 annealed stainless steel bar at the climax of a tensile strength test. Moving apart, the heads of the tensile testing machine stretched the bar until it finally ruptured at 5500 psi above the spec."

In this Jessop metallurgical laboratory, top metallurgists using all types of modern testing equipment help us make certain you get consistent high quality in specialty steels. Specify Jessop . . . and then relax.



In the Jessop metallurgical lab, this tensile testing machine is one of many types of tools used to make certain you get exactly what you want in specialty steels.

Tensile testing machine in the Jessop metallurgical lab. Stretch, strain and then bang! The specimen of type 304 annealed stainless bar ruptured at 5500 psi above the spec. Tensile strength okay!

Jessop Steel International Corporation Steel Warehousing Corporation, Chicago Jessop Steel of Canada, Ltd.

Green River Steel Corporation



Service is our best Salesman

Technical Assistance is Airlifted from QSM

• If you have problems in manufacturing an aluminum product, QSM will fly to the rescue. Want te know which alloys to use for a new product? What's wrong with the metal you are now using? How to overcome a snag in your production line? What kind of new machinery will serve you best?

Let us know of your problems. We will come up with ideas, information, and the help you need. In emergencies, one of our technical experts can be airborne in a matter of hours.

Naturally, there's no charge for this help. It's a routine part of QSM's service to you—the service that's our best salesman.





QUAKER STATE METALS CO. . LANGASTER, PA.

Division of HOWE SOUND COMPANY

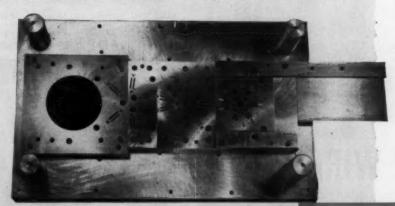
Mill Producers of Aluminum Sheet and Coil

THE

YOU CAN APPLY POLARIZED

RUST VETO 377

TO PREVENT RUST



Tools, dies and other precision finished parts coming off machines that use water-soluble coolants, no longer have to be dried before applying a rust preventive.

Rust Veto 377's tough, thin film also does not have to be removed before parts are used or further processed, unless painting or plating is to be done. The film is almost invisible, yet it resists oxidation for as long as a year without deteriorating.

For full details about Rust Veto 377 send for NEW ILLUSTRATED BULLETIN or for help on any industrial rust prevention problem, call or write: E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.



When preserving for military use specify

COSMOLINE 377

(Conforms to MIL-C-14201A, Grade 2)

Multi-purpose indoor rust preventive actually raises water off metal to form a long-lasting protective film under the moisture.

Polar action forms a thin (0003") protective film

COSMOLINE RUST VETO

Most famous names in rust prevention

products of . . .

E HOUGHTON & CO

Ready to give

Philadelphia, Pa. . Chicago, Ill. . Carroliton, Ga.

Detroit, Mich. . San Francisco, Calif. . Toronto, Canada



CONTINENTAL WIRE

The beauty and smooth operation of fireplace curtain screens depend on accurate forming,

even spacing, and neat appearance of the mesh. The wire used must be of correct temper, diameter and finish. Uniformity of these properties is of prime importance. Leading fireplace equipment makers choose Continental Wire because it possesses these features dependably, in coil after coil. The ability to take intricate forming is an important reason why Continental Wire is specified for scores and scores of other products made with wire. Continental Curtain Screen wire, 19 gauge through 20 gauge inclusive in size, is available in 500 pound to 650 pound catchweight single length coils packed in Leverpac Drums for faster weaving with less down time, cleaner handling and better storage. For wire in practically any size, finish, temper or analysis, in low or medium low carbon steels, see Continental first!

Fine Finishes in Manufacturers' Wire

CONTINENTAL STEEL

CORPORATION

кокомо

INDIANA

EXAMPLE FIREPLACE

> CURTAIN SCREEN WIRE

PRODUCERS OF: Manufacturers' Wire in many sizes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright and special shaped wire. Also Welded Wire Reinforcing Fabric Nails, Continental Chain Link Fence, and other products.

DESIGN DIGEST

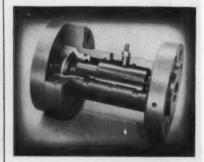
Direct-On Porcelain

A new direct-on porcelain enameling process pickles steel in citric, rather than sulphuric, acid and permits direct application of the covercoat enamel to the steel. Finishes are reported to be as good as, or better than, those obtained with double coats. (Chas. Pfizer & Co., Inc.)

For more data circle No. 42 on postcard, p. 111

Super-Fast Valve

Originally designed for missilelaunching and nuclear-reactor applications, a hydraulic valve can open or close in 0.003 seconds. It is applicable in industry wherever such fast speeds are required. With no stem-and-wheel branching out from it, it is tubular, with a diam-

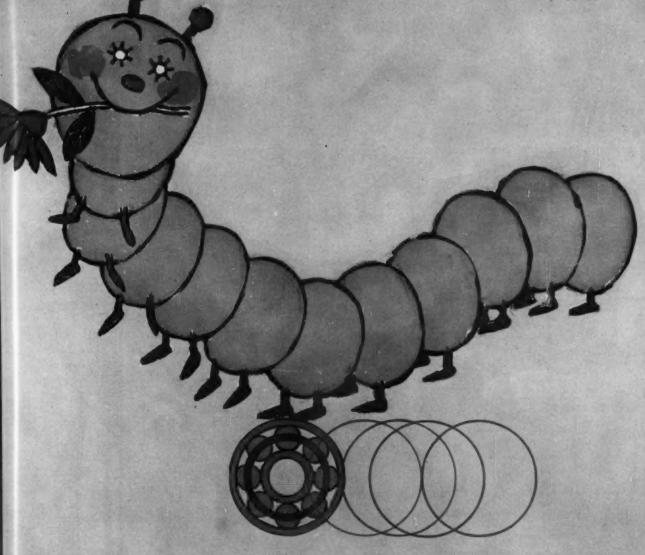


eter no larger than the piston or pipeline on which it is mounted. Mouth diameter can be designed from ½ to 36 in. With pressure capacity of 12,000 psi, it can be remotely actuated by electrical, electronic, hydraulic, or pneumatic controls. (Bendix Aviation Corp.) For more data circle No. 43 on postcard, p. 111

Corrosion Inhibitor

A rust preventive and corrosion inhibitor provides up to three years' protection on all metals and equipment stored outdoors. It deposits a hard film which adheres to any metal surface without checking, flaking or cracking at temperatures as low as 0°F. It will not cause pitting or etching on any ferrous or nonferrous metal. (Chemical Products Div., American Charcoal Co.)

MANDEL



SMOOTH RUNNING

A bearing that turns with the greatest of ease is the bearing that's always certain to please (if you'll pardon our breaking into rhyme). And here at Federal we know that if a finished ball bearing pleases us, it's bound to please you. That's why Federal inspectors are such holy terrors when bearing parts reach their quality control points. And if the parts get through,

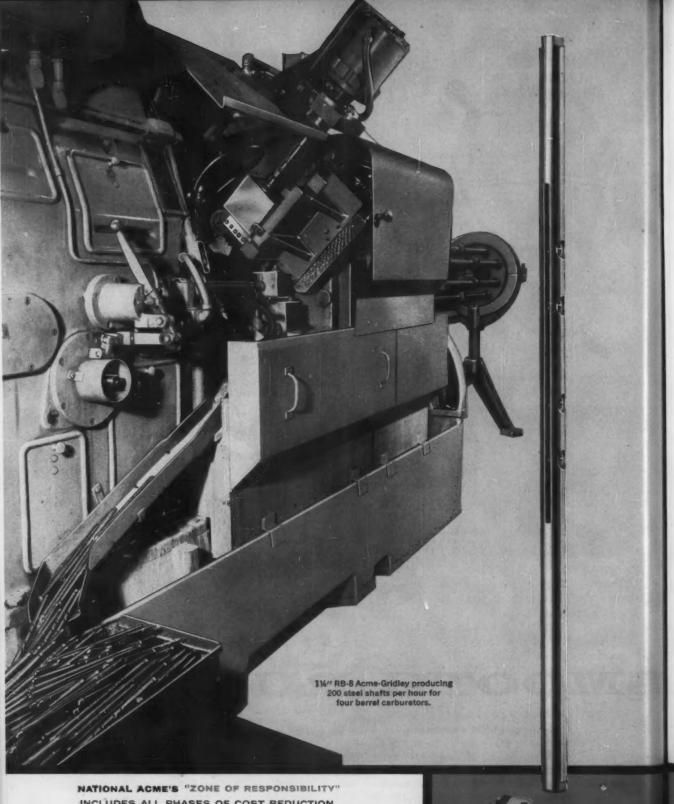
the assembled product is sure to be a ball bearing that will purr sweetly—now and practically ad infinitum. So the next time you want to smooth out a rough anti-friction problem, let Federal Ball Bearings do it for you. You'll find over 12,000 ball bearing sizes and hundreds of types in our catalog. Send for it today.

THE FEDERAL BEARINGS CO., INC., Poughkoepsie, N. Y.

Federal BALL BEARINGS



One of America's largest ball bearing manufacturers



INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS . . . Then Check National Acme

Direct Costs: these include direct dollar savings as realized by Carter Carburetor . . . an "every day" job for Acme-Gridleys.

Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

Product Redesigns teaming with your design group to take full advantage of Acme-Gridleys' cost-reducing capabilities.

Direct Material Costs: our engineers provide important savings in this area by

constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviewst in many cases our Contract Division can assume your production headaches and relieve you of immediate capital investment.

Spot Medernizations pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "on-the-spot" savings.



Versatile Acme-Gridley produces

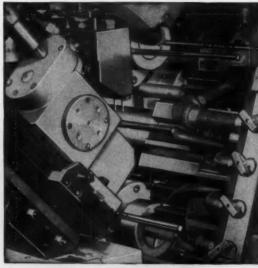
EIGHT DIFFERENT PARTS

With Only Minor Changes in Tooling Setup
For Carter Carburetor division of ACF Industries, Inc.

Here's machine tool versatility at its best . . . versatility that provides documented cost savings for Carter Carburetor year in and year out. Machine investment and cost-per-piece are greatly reduced. Illustrated is but one example.

The spindles of a standard 1¼" RB-8 spindle Acme-Gridley bar automatic were locked against rotation with a simple spindle locking device. Each spindle functioned as a work holder when the machine indexed from position to position. The inherent accuracy of Acme-Gridleys assured precise alignment of the work with the standard and special attachments... whether it's the first or last piece in the run. When spindle rotation is desired, the locking device is simply removed and replaced by the spindle drive gear.

Check the industry's most modern approach to tangible cost reduction. Call, write or wire today!

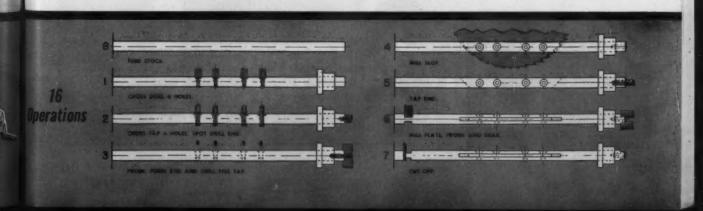


Close-up of tooling zone showing milling of slot in 4th position.



National
THE NATIONAL
AGME COMPANY
175 E. 131st STREE
CLEVELAND 8, OHI

Sales Offices: Newark 2, N.J.; Chicago 6, III.; Detroit 27, Mich.



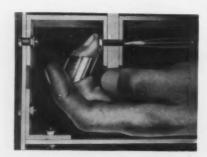
New Equipment and Machinery



Rigid Face Miller Has High Speeds and Feeds

Designed for fast face milling of nonferrous metals, a rotary-table miller boasts rigid construction and fast speeds and feeds. High productivity and assured accuracy result. A second milling head can be supplied for double milling operations. The rotary table provides continuous feed (infinitely variable), stops lost load-unload time, and eliminates cutter drag over the finished surface during a return stroke. The column is radially adjustable relative to the table. (Onsrud Machine Works, Inc.)

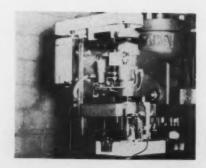
For more data circle No. 45 on postcard, p. 111



Thimble-Wrench Enables Holding in Tight Spots

A boon to assembly and maintenance operations is a thimble-like device that enables positive holding of nuts in spaces inaccessible to conventional tools. A wrench that is worn on the finger like a ring, without restricting free motion of hands or fingers, it permits holding a nut or bolt in true fixed position while turning the other end. The ring portion is adjustable to fit different finger sizes. These finger wrenches are supplied in the most popular hex-head nut sizes. (Beaver Tool Co.)

For more data circle No. 46 on postcard, p. 111



Enables Tapping on Punch or Multi-Slide Presses

A self-powered unit is capable of tapping more than 6000 holes per hour, on presses or other automated machines. It mounts for either vertical or horizontal operation. Stroke of ram or cam of press actuates tap movement into the hole, and interlocks stop the press if the tap fails to clear the hole. Reversal to fore-

ward is instantaneous. Tap range is up to 5/16-in. diam. Average tapping speed is 1750 rpm, withdrawal 3500 rpm. Stock units come for multi-slide presses. Dies for punch presses usually require redesign to accommodate the unit. (Smith Mfg. Co.)

For more data circle No. 47 on postcard, p. 111



Coiler Rolls and Flanges in One Operation

Performing flanging formerly done on a 500-ton press, a coiler has a special attachment which rolls 5/16- to \%-in. flanges on 30-in.-OD stainless rings, 90 per hour. It can be set up to roll and flange in one operation. Very versatile, the machine will coil pipe, tube, wire,

strap flat stock, and solid bar stock up to 2½-in. OD. Coiling diameters are infinitely variable by one easy adjustment. Setup involves only inserting dies and adjusting feed and the coiling pitch. (Curvit Div., Maclodyne Corp.)

For more data circle No. 48 on postcard, p. 111

Pinpointing your **structural** steel needs

Whether your structural steel fabricating requirements involve a difficult design problem, working out a complicated time-table, locating some strategic structural members or simply getting assurance of top quality fabrication at the right price, you can depend on LEVINSON to help you pinpoint your needs and solve your problem. LEVINSON sales engineers have a special knack of cutting through the maze of statistics and boiling your problem down to clear, simple terms. If you like to deal with a firm that knows its business, that knows how to get to the root of your problem quickly, efficiently and economically and that is dedicated to the idea that your structural steel must be delivered "on time and as specified," place your next structural steel order with LEVINSON.

EVINSON

STEEL SERVICE CENTER ... FABRICATORS



the



Identification

Specify PANNIER STEEL STAMPS for a longer life of CLEANCUT MARKING

29,335 hammer blows—and still marking cleanly—Pannier Letter and Number Stamps

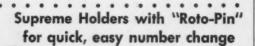
Rounded corners for finger comfort Rounded head distributes impact, reduces mushrooming.

> Added metal in Pannier fillet increases durability. Correct bevel gives clearer impression, longer life. Outside bevel longer than inside for protection of character face.

Made of the finest tool steel and correctly heat treated for best combination of hardness and toughness, Pannier single character stamps can take it! Scientific shaping and accurate engraving insure a long life of good, clear impressions. Available in letters, figures and special symbols, and in light, medium or heavy duty design.

Extra tough steel forging stamps for hot or cold, heavy duty marking

For stamping names, part or patent numbers, trade marks and similar markings, Pannier forging stamps are made in four styles:—Hand-style, fullered for wire handle and wood handle style with eye parallel or perpendicular to lettering. All are designed and heat treated for clear impressions and long service. All are covered by the Pannier Master Marker guarantee.



Roto-Pin makes this Pannier Master Marker a time saver in number change and makes serial number marking fast and efficient. The hardened anvil at the base of the type slot keeps type in perfect alignment for equal impression. Machined from bar tool stock, the Supreme Holder has a heat treated striking head. Both anvil and striking head are replaceable for longer life of the holder itself. Made in hand or wood handle styles, for hot or cold marking.

Write for literature



easy, half-turn for Roto-Pin reses any or all of steel type for t change. A re-

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PANNIER
MASTER
MARKERS
FOR QUALITY

NEW EQUIPMENT

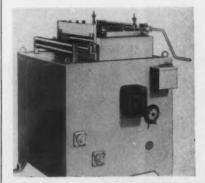
Vernier Height Gages

Vernier height gages of 60- and 72-in. size are available on special order, augmenting a standard line of 12, 18, 24, 36, and 48-in. sizes. Of standard design, they are extremely accurate and useful for all inspection and gaging operations. (The L. S. Starrett Co.)

For more data circle No. 49 on postcard, p. 111

Feeding Straightener

A new machine combines the features of a roll straightener with those of an automatic feeding machine. It feeds uniform, controlled lengths of coiled, flat, or strip stock, passing them through a series of powered rolls, thus producing flat stock free of curl or camber. A



timer can be set to produce any length up to 60 in. By adding a timer bypass circuit, work of any length can be fed. Models are available with fixed or variable-speed drives. Various machine sizes take stock up to 50 in. wide, and in various gages. (Benchmaster Mfg. Co.)

For more data circle No. 50 on posteard, p. 111

Hand Tool Hones

A line of hand lapping tools is designed for sharpening and lapping carbide and steel cutting tools. Boron carbide, which far exceeds tool carbide in hardness, gives them rapid cutting action and long life. They come in flat, round, and triangular shapes. (Titan Tool Supply Co., Inc.)

For more data circle No. 51 on postcard, p. 111

SHAPE OF THE MONTH

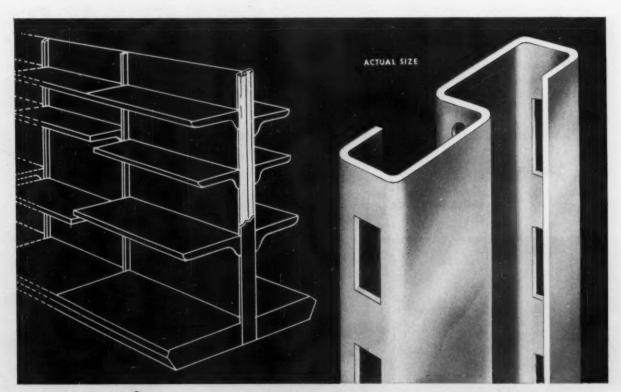
BY

VAN HUFFEL



This upright shelving post is another of the many ideas Van Huffel roller die, cold forms in metal for a wide variety of applications.

Whether you require a simple or complex shape — in practically any coiled strip metal $\frac{1}{2}$ " to 33" wide — want it punched, notched, seamed, fluted, beveled, welded, coiled, curved or embossed — it's probable Van Huffel's experience, facilities and products can help you cut costs and make a better product. The handbook shown below tells you how.





MAIL THE COUPON FOR FREE METAL SHAPES HANDBOOK

Contains 48 pages of information on material selection, fabrication methods, tolerances and dozens of illustrated ideas that have taken shape in metal.

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THE CORPORAT	HOL	- 34	/ADDEN	OHIO

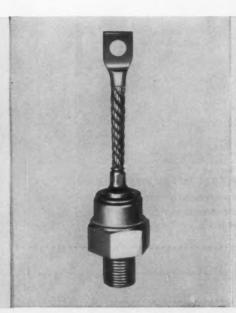
Name	Title
Company	•••••
Address	
City	Zona Stata

ROLLER DIE, COLD FORMING METAL SHAPES AND TUBING FOR OVER HALF A CENTURY



new . . . Silicon Type WS

200, 300, 400 and 500 Amperes 230/460 Volts 60% Duty Cycle



Silicon diodes in the three-phase, full-wave rectifier are the heart of the WS welder. These diodes have a capacity far in excess of the rating for the welder and are hermetically sealed against dust, oil, water and acid fumes by a new bonding process. Each diode is thoroughly tested before and after insertion in the bridge.



Watch Westinghouse for New Developments in Welding

R

The ineering signer is a phouse varied check Every sure in the check Every sur

cept in Since type with the use fier m

The investor star power in faults. (voltage star

Rectifier Welder

- Maximum Performance at Minimum Cost
- Highest Degree of Electrical Efficiency
- Most Compact Welder in the Industry
- Extremely Low Maintenance

The Type WS silicon rectifier welder reflects engineering skill of the highest order. This welder is designed for maximum performance and reliability. It is a product of experience—developed in the Westinghouse laboratories and tested in the field under a variety of conditions. The welder you purchase will be checked out in every detail before it leaves our factory. Every conceivable precaution has been taken to assure you of a faultless piece of equipment.

Westinghouse pioneered this completely new concept in industrial welding machines over 10 years ago. Since that time another refinement of the rectifier-type welder was achieved by Westinghouse through the use of silicon diodes. The ultimate in silicon rectifier machines is the Westinghouse Type WS.

No other welder on the market has the electrical cir-

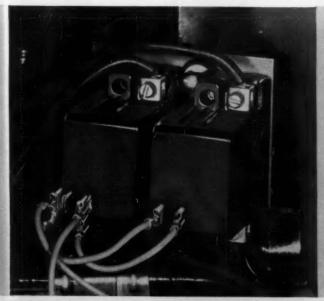
cuitry to produce sound quality welds as consistently as the *WS*. It provides easier starting, are stability and maximum drive. Silicon rectification means top welding performance.

The WS is the lightest, smallest machine on the market. It is easy to handle and is a space saver. Its bonderized steel casing, protected by baked-on enamel, gives it a weatherproof construction. The high-quality materials in this welder will render long life and trouble-free service.

Learn more about this reliable source of power for welding!

Contact your nearest franchised Westinghouse welding distributor—or write: Welding Division, Westinghouse Electric Corporation, 4454 Genesee Street, Buffalo 5, New York.

J-22150



The inverse time relay shown here allows adequate time delay for arc starting at high current setting and freedom from nuisance power interruptions—yet it protects against serious short circuit faults. Capacitors divert and store peak, high-value, short-time voltage spikes that occur when electrical current is broken.



The Type WS has virtually no moving parts to wear out; thus, replacement is at a minimum. The easy access panel shown here makes routine maintenance and air cleaning of the rectifier bridge a fast, simple operation. Be costwise, avail yourself of this extremely low maintenance!

YOU CAN BE SURE ... IF IT'S

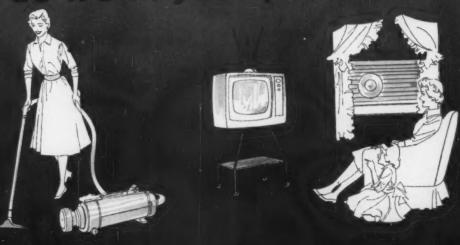
Westinghouse

WATCH "WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS" CBS TV FRIDAY

QUALLITY It's in our steel



so it's in your products



ALAN WOOD STEEL COMPANY



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THE I

The Iron Age Summary

Strike Hits Capital Spending

So far, capital spending holdups are confined to delays, not permanent cutbacks.

Many steel companies are reappraising their programs, and so are some hard-hit steel users. Shortages continue to spread as strike effects multiply.

• Industry's strike losses are cutting into capital spending programs. So far, the result has been confined to delaying actions, with few major programs actually eliminated.

But makers of tools and industrial equipment are feeling the secondary effects of their customers' cutbacks.

Steel Programs—The steel companies themselves have not been able to continue their own programs during the strike. This has meant delays in their plans as a direct result of the strike. But financial losses incurred in the third quarter have resulted in some re-appraisals of new steel expansion and improvement plans.

Most companies will go ahead with announced programs as soon as the strike ends. Some will be hard-pressed financially to follow through with immediate plans. Nearly all will be affected to the extent that future programs will be re-appraised or delayed.

Tooling Delayed—Some tooling orders from the hard-hit steel users also have been delayed. In the auto industry, for example, orders for machine tools are off significantly. While automakers report they have not altered their tooling programs, toolmakers say it is very difficult to "get decisions" on machine tool programs that are under study.

Shortages of some consumer goods will be felt in the winter months. With General Motors virtually closed down, the others cutting back production by varying degrees, auto production will drop to less than half of what could be expected for the season.

Appliance Shortage — On appliances, shutdowns at major producers are threatening shortages in

dealer stocks. Some appliance makers have already put their distributors on quotas. Manufacturers are pushing production on the fastest moving products, with the result the range of stocks is narrowing.

Auto and appliance makers are in the front on conversion deals. (That is, buying semi-finished steel from one source and locating rolling facilities to turn out the finished product.)

Conversion Plans—Steel will now be tight for the first half of 1960. This applies to a wide range of products. But cold-rolled and galvanized sheet will be the most troublesome. This is pointed up by reports that automakers have lined up conversion facilities for the second quarter of 1960, an unprecedented advance planning for this expensive arrangement.

Plate and structural mills still don't know how big a bite defense orders will take out of their schedules. With six months accumulation piled up during the strike, this will present a real problem.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 382	Last Week 368	Month Ago 368	Year Ago 2,011
Ingot Index	22.0	22.0	22.0	125.0
(1947-1949=100)	23.8	22.9	22.9	125.2
Operating Rates				
Chicago	5.0	5.0	5.0	86.0
Pittsburgh	4.0	4.0	4.0	69.0
Philadelphia	12.0	12.0	12.0	70.0
Valley	10.0	10.0	10.0	60.5
West	20.0	0.0	0.0	82.5
Cleveland	0.0	- 0.0	0.0	78.5
Detroit	24.0	24.0*	26.0	80.0
Buffale	0.0	0.0	0.0	76.0
South Ohio River	69.5	70.0*	70.0	85.0
South	12.5	12.5	12.0	60.0
Upper Ohio River	57.0	58.0*	57.0	86.0
St. Louis	94.0	102.0*	91.0	94.0
Aggregate	13.5	13.0	13.0	74.5

*Revised

Prices At a Glance

	This	Week	Month	Year
	Week	Ago	Ago	Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	6.196
Pig Iron (Gross ton)	\$66.41	\$66.41	\$66.41	\$66.41
Scrap No. I hvy				
(Gross ton)	\$46.17	\$46.17	\$43.50	\$42.81
No. 2 bundles	\$31.50	\$31.50	\$29.83	\$29.50
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.80
Copper, electrolytic	30-31.5	30-31.5	10-31.50	29.00
Lead, St. Louis	12.80	12.80	12.80	12.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	101.25	101.75	103.50	97.75
Zinc, E. St. Louis	12.50	12.5-13	12.00	11.00

Strike to Hit Controls Sales

Electrical controls makers report no bad effects from the steel strike yet, but expect it will cause a slowdown in the fourth quarter.

A spring recovery and a good year in 1960 are expected once the strike is settled.

• So far the steel strike has been highly selective in seeking victims in the electrical controls field.

Many companies throughout the country have not suffered the sting of cancelled orders or steel shortages—yet. But they may feel such discomfort before the end of the year.

Good Year—One of the largest manufacturers of electrical control equipment reports sales this year are 15 pct ahead of a yeat ago. "The normal seasonal fall-off and effects of the steel closedown will knock out some sales in the last quarter," says an official. "But 1959 will still show a healthy increase over 1958. And we look for a great expansion in all markets in 1960."

Some suppliers, particularly those who service the automotive industry, report business this year is running "well over 25 pct ahead of 1958." One source says car makers are going right ahead with factory expansion plans and processing changes despite the steel situation. "We've had lots of sales and lots

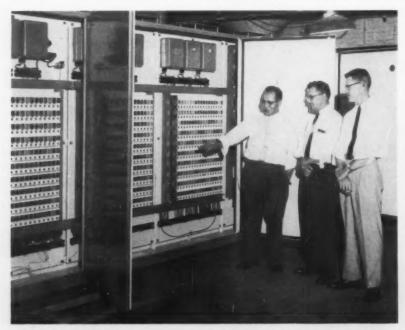
of inquiries for industrial heating controls," he says. "We don't expect any serious slowdowns in business."

Supplies Holding—Another large operator says sales of large equipment going into industrial plants have not yet been affected by the strike. "Our own supplies of steel are spotty," he claims. "Certain gages are low. But we've got enough steel to carry through the end of the year."

However, some outfits have not been so fortunate. Business declines of up to 20 pct have been reported since the steel strike started last July. These reports come from firms that have steel mills for customers.

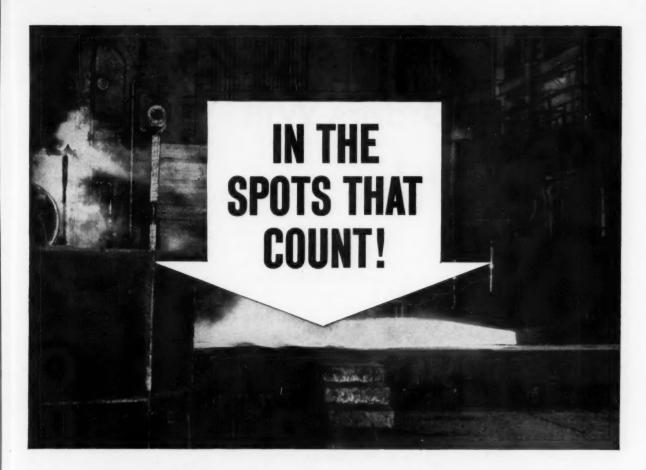
Spring Upturn — "Our sharpest drops have been in the Pittsburgh and Cleveland areas," states a maker of electric wiring devices and motor controls. "In other parts of the country it hasn't been so bad. But we've noticed an overall slackening in business since September." It was explained, however, that September is generally a peak month because schools and factories do much of their buying at that time.

One producer of electrical controls for automation machinery predicts a lag in his business throughout the rest of 1959. He started in business at an unfortunate time—in June, just before the strike started. "We went great guns for two and a half months," he says. But now our clients, particularly the ones who build industrial ovens, are really in poor shape steel-wise. We expect a healthy spring pickup in business, though. That is, if the strike is ever settled once and for all."



CONTROL PANEL: S. S. Zwiren, GE control sales manager shows a new control panel to AC Spark Plug's Milton Pardell and Robert McConnell. The unit will be installed at AC's Flint, Mich. Plant. It will handle nine power supplies used in the firm's automatic sorting and storage.

THE IRO



split-second control with Homestead® Operating Valves keeps steel plate rolling!



Solenoid-hydraulic pilot controlled 4" and 2½" Hydro-Cushion Homestead Operating Valves; and Lever-Seald Hydraulic Stop Valves; 800 pounds working pressure.



HOMESTEAD VALVE MANUFACTURING COMPANY
P. O. Box 23, Coraopolis, Pennsylvania

Six days a week, twenty-four hours a day, 250 times an hour, the tilt tables and middle roll of an East Coast Plate Mill are exactly positioned without shock, and held without creepage, by Homestead Operating Valves. This precision control has permitted record-breaking rolling of the hot steel slabs into plate.

Through more than three and one-half million split-second rollings during the two years the $2\frac{1}{2}$ " and 4" Hydro-Cushion Homestead Operating Valves have been in service, not one shutdown has been required for valve maintenance! Performance records such as these, are assured by the protected seat and cushioning action of the Homestead Valves.

For any hydraulic control problem, there is a Homestead Operating Valve to meet your needs. Send today for Reference Book 39-6.



Please send Reference prices on all types of	ce Book 39-6 and f Homestead Operating Valves.
Name	Title
Company	***************************************
Address	***************************************
City	ZoneState

Defense Orders Will Go Out First

When mills start up, military steel orders will get top attention.

Mills wonder how this will affect shipments of other tonnage now on the books.

• Defense steel needs will help scramble the delivery outlook when mills start up.

Under government orders, mills are asked to get defense-rated orders out quickly. Mills with backlogs of priority orders must ship them "by the end of the month following the month of resumption or 45 days after resumption."

In addition, the mills say some orders carry a super-priority.

How Much?—At the moment, steel producers are wondering how deeply this will cut into the tonnage made in the first weeks of operation. On mill books now, unshipped, are defense orders for fourth months or more.

Mills making heavy steel products—plates and shapes—are most concerned about the situation. Producers of sheet and bar stand to be less affected.

Steel mills now working have been told to give top priority to steel needed for military, missile, and atomic energy applications. In some cases, defense-rated orders placed with struck mills have been transferred to those operating.

Sheet and Strip—Whenever possible, sheet mills are delaying paper work on orders already entered on books. At this point they feel there is little value in extending delivery

times or changing specs. The mills would rather wait until production resumes. They will then be in a better position to handle the changes. Right now mills are assuring users the maximum tonnages possible will be shipped.

The amount of foreign sheet available has dropped off. The small quantities still offered run as high as 22¢ a lb.

Plates and Shapes—Some mills estimate new orders for plate won't be delivered before the end of first half 1960. More and more, it appears that plate may be tight for most of next year. A large Eastern producer, with a backlog of four months, is putting buyers on a "limited acceptance" basis.

Structural demand will receive a boost when railroad carbuilding programs are resumed. Right now, railroads are holding off until steel and railroad labor troubles are cleared up.

Bar—Mills see a strong demand for bar right through the third quarter of 1960. Producers say they will honor carryovers left from the sec-

PURCHASING AGENT'S CHECKLIST

Tough days are ahead for steel users when strike ends. Shortages have been soft-pedaled. P. 49
Steel shutdown has dealt body blow to those using LIFO method of valuing inventories. P. 53
How you can boost net profits through distribution cost analy-

P. 63

ond quarter of this year. But, because many users did not enter third quarter orders, the mills will re-open third quarter bookings. This means both the customers and mills will start off with a clean slate.

At present there are conversion deals arranged to get cold drawn bar at small cold drawing plants. The diameter available is limited to coiled rod sizes. Hot-rolled bar mills report new orders are still coming in.

Flat-R Hot-Cold Galv

Hot-Cold Plat Plat Stai

Tin a

Bars a Mer Cole Alle

Rails: Hea Ligi

Rer

Stainless—The prospect for stainless when mills resume is about as critical as it is for carbon products. One mill now producing has filled books through next March. There is a chance the situation will improve when some of the mill's ingot capacity (now strike-bound) is again added.

Service Centers—Customers are contacting warehouses on an around-the-clock basis, hoping to dredge out the last available steel. Some Midwest service centers say they are down to 20 pct of normal inventory levels. Bars are in critical supply. Some "secondary" sheet now being sold is actually of only fair quality. But users are still glad to get it.

Pig Iron—A shipment of Russian pig iron has been sold in Midwest markets about \$16 a ton below U. S. prices. (See photo on p. 59). About 2400 tons was sold to a plant in Buffalo and another 600 tons in Detroit. Arrival of the pig iron during the steel strike was strictly a coincidence. Price was the big attraction for buyers of the Russian product. Some observers feel additional offerings will also be snapped up as bargains.

Pipe and Tubing—Some orders for buttweld pipe will probably be filled fairly quickly when mills resume operations. This is pipe available in either finished form or as stock ready for processing.

Buyers of oil country seamless are putting more tonnage on mill order books. The buying pace has been stepped up in recent weeks.

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COMPARISON OF PRICES

(Effective Nov. 3, 1959)

Steel prices on this page are the average of various f.o.b. quotations f major producing areas: Pittsburgh, Chicago, Gary, Cleveland, coungatown.

Price changes from previous week are shown by an asterisk (*).

Nov. 3 1959	Oct. 27 1959	Oct. 6 1959	Nov. 4 1958
5.10¢ 6.275 6.875 5.10	5.10¢ 6.275 6.875 5.10	5.10¢ 6.275 6.875 5.10	5.10¢ 6.275 6.875 5.10
5.30 13.55 52.00	5.30 13.55 52.00	7.425 5.30 13.55 52.00	7.425 5.30 13.55 52.00
x)			
9.85	\$10.65 9.35	\$10.65 9.35	\$10.65 9.35 9.90
5.50	0.00	5.50	3.90
5.675¢ 7.65 6.725 5.50 46.75 14.90	5.675¢ 7.65 6.725 5.59 46.75 14.90	5.675¢ 7.65 6.725 5.50 46.75 14.90	5.675¢ 7.65 6.725 5.50 45.00 14.90
8.00€	8.00¢	8.00¢	8.00€
\$5.75 6.725	\$5.75 6.725	\$5.75 6.725	\$5.75 6.725
\$80.00 80.00 99.50 119.00	\$80.00 80.00 99.50 119.00	\$80.00 80.00 99.50 119.00	\$80.00 80.00 99.50 119.00
6.40¢ 5.05	6.40¢ 5.05	6.40¢ 5.05	6.40¢ 5.05
ound) 6.196¢	6.196¢	6.196€	6.196¢
	1959 5.10¢ 6.275 6.876 5.10 7.425 5.30 13.55 52.00 x) \$10.65 9.35 9.90 9.55 6.72¢ 7.65 6.725 8.00¢ 8.00¢ 8.00¢ 99.50 119.00 d) 6.40¢ 5.06	1959 1959 5.10¢ 5.10¢ 6.275 6.275 6.275 5.10 5.10 7.425 7.425 5.30 5.30 13.55 13.55 52.00 52.00 8) \$10.65 9.35 9.35 9.90 9.90 5.675¢ 7.65 6.725 6.725 6.725 6.75¢ 14.90 14.90 8.00¢ 8.00¢ \$5.75 6.755 6.725 85.75	1959 1959 1959 5.10¢ 5.10¢ 5.10¢ 6.275 6.275 6.275 6.275 5.10 5.10 5.10¢ 6.875 5.10

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Phila-delphia, Buffalo and Birmingham.

Oct. 27 Oct. 6 Nov. 4 1958 1959 1959
 Pig Iron:
 (per gross ton)

 Foundry, del'd Phila.
 \$70.57

 Foundry, Southern Cin'ti
 73.87

 Foundry, Surmingham
 62.50

 Foundry, Chicago
 66.50

 Basic, del'd Philadelphia
 70.97

 Basic, Valley furnace
 66.90

 Malleable, Chicago
 66.50

 Malleable, Valley
 66.50

 Ferromanganese, 74-76 pct Mn, cents per lb\$
 12.25
 \$70.57 73.87 62.50 66.50 70.07 66.00 66.50 \$70.57 73.87 62.50 66.50 70.07 66.50 66.50 66.50 66.50 12.25 12.25 12.25 \$66.41 \$66.41 866,41
 Serap:
 (per gross ton)
 \$47.50

 No. 1 steel, Pittsburgh
 \$47.50

 No. 1 steel, Phila. area
 46.50

 No. 1 steel, Chicago
 44.50

 No. 1 bundles, Detroit
 41.50

 Low phos., Youngstown
 49.50

 No. 1 mach'y cast, Pit.burgh
 55.50

 No. 1 mach'y cast, Phia.
 53.50

 No. 1 mach'y cast, Chicago
 64.50
 \$45.50 44.50 44.50 40.50 48.50 55.50 53.50 64.50 39.50 43.50 36.50 47.50 51.50 $\frac{49.50}{53.50}$ 63.50 Steel Scrap Composite: (per gross ton)
No. 1 hvy. melting scrap \$46.17
No. 2 bundles 31.50
 Coke, Connellaville:
 (per net ton at oven)

 Furnace coke, prompt
 ...\$14.50-15.50
 14.50-15.50
 \$14.50-15.50
 14.50-15.50
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 < 29.00 97.75 11.00 12.80 26.80 74.00 26.80 74.0029.50 29.50

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of

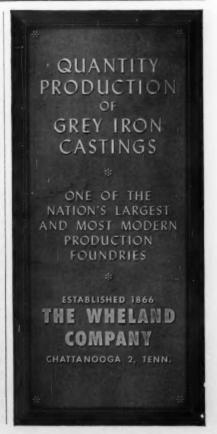
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Industrial Scrap Output Falls

Generation of industrial scrap has fallen sharply in recent weeks. As steel-short plants reduce or halt production.

And grades of scrap suitable for use in conversion deals often bring a premium.

• Industrial scrap is becoming scarcer and scarcer. A number of large industrial producers have withdrawn all or most of their November tonnages from the market. In some cases, the scrap is headed for conversion deals. In others, it just isn't going to be there as steel supplies are exhausted and plants cut back or halt production.

No. 1 bundles and No. 1 busheling are bringing premium prices in some markets. These items are highly desirable for conversion deals. The analysis is generally close to that of the finished product involved in conversion deals.

Export remains strong in port areas. Generally, dealers in port areas have moved scrap throughout the strike. This has held inventory down and prices up. And, where these areas normally have an active domestic market, top steelmaking grades could be in short supply by the time mills start placing large orders.

Pittsburgh—Prices of most grades are unchanged here as there is still not enough activity to peg market strength. For small quantities of No. 1 openhearth scrap, a mill on the fringe of the district raised its price \$5 from last month. No. 1 factory bundles were sold by a

broker for more than \$54. The biggest supplier of factory bundles in the district isn't offering a list for next month. Brokers say low phos is hard to buy at any price.

Chicago—Small tonnages of factory bundles continue to move on new lists with a wide spread of prices. The heaviest tonnages reported, however, moved at prices of \$49 at the top of the list and a number of bundle producers have withdrawn their lists from bidding and are holding out for a higher figure. Similarly, some railroad material has been withdrawn from the market and is being held for sale at a later date.

Philadelphia — Industrial scrap generation continues to fall as steel supplies dwindle. However, availability of secondary grades has improved as peddlers and car wreckers step up activities. Export is still very active with several boats now in port.

New York—Exports, plus some domestic buying and anticipation of the end of the steel strike, continue to act as upward pressures on this market for heavy melting steel scrap. Both grades rose \$2 per ton here this week. One stainless grade also rose \$5. Other grades are unchanged.

Detroit — Very little scrap was offered on November industrial lists. But tonnages offered brought \$2 to \$4 more than October's list. Much of the buying was speculation on the part of both dealers and brokers. There is still a widespread feeling of strength in the market.

Cleveland — Lack of an openhearth market in the northeastern Ohio area has brought on an oddity of three prices for the top three grades of dealer scrap. Two electric furnace users are taking bundles and busheling, but heavy melting goes begging. Dealer bundles are up \$1 and busheling \$2. Valley low phos plate is also up \$1. Auto lists sold at quoted levels, indicating some steam may be going out of the market.

St. Louis—Scrap supplies in this area have been building up, but dealers are beginning to move scrap. An uneasy feeling prevails, but prices remain strong.

Cincinnati—Market edged up \$2 and \$3 on blast furnace grades as brokers are having a hard time buying quality crushed turnings. Demand for openhearth grades in the area is stronger this month.

Birmingham—The scrap market is strong. A Birmingham dealer who has spurned offered prices for some time this week sold 12,000 tons at prices well above quotations. A railroad list was up \$2 to \$3 over last month. An Atlanta mill was a heavy buyer. Cast prices rose \$1 to \$2 a ton, possibly due to scarcities.

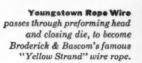
Buffalo—Dealers remain bullish despite a complete lack of activity here. However, prices are unchanged. Plant shutdowns and production curtailments due to the steel strike have cut the availability of industrial scrap to almost nothing.

Boston — Optismistic sentiment of the market is excellent. Prices are good and holding firm. Business is still holding up. The usual story is that the trade is waiting for the steel strike to end.

West Coast—Kaiser's pact with the union is sure to firm up the market. There is talk about a \$2 to \$3 jump in sight for steelmaking grades. Ten cargos are scheduled to leave for Japan this month.

Houston—The domestic market retains its status quo, but export activity continues strong.

THE





Accent on Excellence

Youngstown rope wire



Youngstown



Lifting a mighty fir or a stalled automobile, a sling of wire rope is tough to beat for speed, safety and handling ease. Long experience, sound engineering and only the best materials—that's what it takes to make a good sling, and Broderick & Bascom makes them for almost every lifting job you can name.

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Wherever steel becomes a part of things you make, the high standards of Youngstown quality, the personal touch in Youngstown service will help you create products with an "accent on excellence".

The Youngstown Sheet and Tube Company, Youngstown, Ohio.
Carbon, Alloy and Yoloy Steel.

Pittsburgh

No. 1 hvy. melting	47.00	to \$4	8.00
No. 2 hvy. melting	39.00	to d	0.00
No. 1 dealer bundles	48.00	to 4	19.00
No. 1 factory bundles	53.00	to E	4.00
No. 2 bundles	33,00		34.00
No. 1 busheling	47.00		18.00
Machine shop turn			
Shoveling turnings	24.00		25.00
Coot img turnings	31.00		32.00
Cast iron borings	30.00		31.00
Low phos, punch'gs plate.	55.00	to !	56.00
Heavy turnings	40.00	to i	41.00
No. 1 RR hvy. melting	50.00		51.00
Scrap rails, random lgth	59.00		60.00
Rails 2 ft and under	64.00		65.00
DD chesistein			
RR specialties	59.00		60.00
No. 1 machinery cast	55.00	to	56.00
Cupola cast	51.00	to	52.00
Heavy breakable cast	49.00	to	50.00
Stainless			o o to o
18-8 bundles and solids.	235.00	to 2	40.00
18-8 turnings	115.00	to 1	20.00
430 bundles and solids	130.00	to 1	25.00
410 turnings	60.00	Tra A	65.00
*** ***********************************	00.00	w	00.00

Chicago

Chicago			
No. 1 hvy. melting\$	44.00	to s	\$45.00
No. 2 hvy. melting	41.00		42.00
No. 1 dealer bundles	44.00	to	45.00
No. 1 factory bundles	50.00		51.00
No. 2 bundles	30.00		31.00
No. 1 busheling	44.00		45.00
Machine shop turn	26.00	to	27.00
Mixed bor, and turn	28.00		29.00
Shoveling turnings	28.00	to	29.00
Cast iron borings	28.00		29.00
Low phos. forge crops	58.00	to	59.00
Low phos. punch'gs plate.			
1/4 in. and heavier	55.00		56.00
Low phos. 2 ft and under.	53,00	to	54.00
No. 1 RR hvy. melting	50,00		51.00
Scrap rails, random lgth	59.00		60,00
Rerolling rails	67.00		68.00
Rails 2 ft and under	63,00		64.00
Angles and splice bars	58.00		59.00
RR steel car axles	60.00		61.00
RR couplers and knuckles	55.00		56.00
No. 1 machinery cast	64.00		65,00
Cupola cast	57.00		58.00
Cast iron wheels	51.00		52.00
Malleable	65.00		66.00
Stove plate	53.00		54.00
Steel car wheels	56.00	to	57.00
Stainless	200 00		
18-8 bundles and solids.	220.00	10	225.00
18-8 turnings	120.00	to	125.00
430 bundles and solids	120.00	to	125.00
430 turnings	90.00	to	55,00

Philadelphia Area

No. 1 hvy. melting	46.00	to	\$47.00
No. 2 hvy. melting	40.00	to	41.00
No. 1 dealer bundles	48.00	to	49.00
No. 2 bundles	30.00	to	31.00
No. 1 busheling	48.00	to	49.00
Machine shop turn	24.00	to	25,00
Mixed bor, short turn	23.00		24.00
Cast iron borings	22.00		
Shoveling turnings	27.00		
Clean cast, chem. borings.	30.00		
Low phos. 5 ft and under.	49.00		
Low phos. 2 ft punch'gs	51.00		
Elec. furnace bundles	49.00		
Heavy turnings	34.00		
RR specialties	49,00		
Rails' 18 in. and under	67.00		
Chans to in. and under			
Cupola cast	46.00		
Heavy breakable cast	47.00		
Cast iron car wheels	48.00	to	49.00
Malleable	67.00	to	68,00
No. 1 machinery cast	53.00	10	54.00

Cincinnati

Brokers buying prices per gross ton	on cars:
No. 1 hvy. melting\$38.00	to \$39.00
No. 2 hvy. melting 32.50	to 33,50
No. 1 dealer bundles 38.00	
No. 2 bundles 27.00	to 28.00
Machine shop turn 21.00	
Shoveling turnings 24.00	to 25,00
Cast iron borings 23.00	
Low phos. 18 in. and under 49.00	to 50.00
Rails, random length 55.00	to 56.00
Rails, 18 in. and under 61.00	to 62,00
No. 1 cupola cast 49.00	to 50,00
Hvy. breakable cast 44.00	to 45.00
Drop broken cast, 59.00	to 60.00

Youngstown

No.	1	hvy.	mel	ting				\$46.00	to	\$47.00
No.	2	hvy.	mel	ting				39.00	to	40.00
No.	1	deal	er b	undle	8			47.00	to	48.00
No.	2	bune	iles					29.50	to	30.50
Mac	hi	ne sl	OD	turn.				21.50	to	22.50
Sho	ve	ling	turi	ings				26.50	to	27.50
				to						50.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting\$42.50 to 1	43.50
No. 2 hvy. melting 35.50 to	36.50
No. 1 dealer bundles 43,50 to	44.50
No. 1 factory bundles 48.00 to	49.00
No. 2 bundles 26,00 to	27.00
No. 1 busheling 44.50 to	45.50
Machine shop turn 19,00 to	20.00
Mixed bor. and turn 24.00 to	25.00
Shoveling turnings 24.00 to	25.00
Cast iron borings 24.00 to	25.00
Cut structural & plates, 2	
ft & under 49.00 to	50.00
Drop forge flashings 42.50 to	43.50
Low phos. punch'gs plate. 45.50 to	46.50
Foundry steel, 2 ft & under 41.00 to	42.00
No. 1 RR hvy, melting 46.50 to	47.50
Rails 2 ft and under 60.00 to	61.00
Rails 18 in. and under 61.00 to	62.00
Steel axle turnings 24.00 to	25,00
Railroad cast 58.00 to	59.00
No. 1 machinery cast 56.00 to	57.00
Stove plate 51.00 to	52.00
Malleable 67.00 to	68.00
Stainless	00100
18-8 bundles225.00 to	235.00
18-8 turnings	120.00
430 bundles120.00 to	125 00
100 1001000 111111111111111111111111111	120.00

Buffalo

No. 1 hvy. melting\$	36.00	to	\$37.00
No. 2 hvy. melting	29.00	to	30.00
No. 1 busheling	36.00		
No. 1 dealer bundles	36.00	to	37.00
No. 2 bundles	25.00	to	26.00
Machine shop turn	17.00	to	18.00
Mixed bor, and turn	18.00	to	19.00
Shoveling turnings	21.00	to	22.00
Cast iron borings	18.00	to	19.00
Low phos. plate	41.00	to	42,00
Structurals and plate.			
2 ft and under	42.00	to	43.00
Scrap rails, random lgth	40.00	to	41.00
Rails 2 ft and under	50.00	to	51.00
No. 1 machinery cast	51.00	to	52.00
No 1 oundle cast	47.00	200	48.00

St. Louis

No. 1 hvy. melting	40.00	to	\$41.0
No. 2 hvy. melting	37.00		38.0
No. 1 dealer bundles	46.50	to	47.5
No. 2 bundles	28.00	to	29.0
Machine shop turn	21.00	to	22.0
Shoveling turnings	23.00	to	24.0
Cast iron borings	24.00	to	25.0
No. 1 RR hvy. melting	49.00	to	50.0
Rails, random lengths	54.00	to	55.0
Rails, 18 in. and under	58.00	to	59.0
Angles and splice bars	50.00	to	51.0
RR specialties	51.00	to	52.0
Cupola cast	55.00	to	56.0
Heavy breakable cast	45.00	to	46.0
Stove plate	46.00	to	47.0
Cast iron car wheels	48.50	to	49.5
Rerolling rails	65.00	to	66.0
Unstripped motor blocks .	45.00	to	46.0

Birmingham

No. 1 hvy. melting		to	
No. 2 hvy. melting	32.00	to	33.00
No. 1 dealer bundles	35.00	to	36.00
No. 1 special bundles	38.00	to	39.00
No. 2 bundles	25.00	to	26.00
No. 1 busheling	41.00	to	42.00
Machine shop turn	24.00	to	25.00
Shoveling turnings		to	28.00
Cast iron borings		to	15.00
Electric furnace bundles	40,00	to	41.00
Elec. furnace, 3 ft & under		to	39.00
Bar crops and plate	46.00	to	47.00
Structural and plate, 2 ft.	46.00	to	47.00
No. 1 RR hvv. melting		to	42.00
Scrap rails, random lgth	51.00	10	52.00
Rails, 18 in, and under	56.00	to	57.00
Angles and splice bars	49.00	to	50.00
Rerolling rails	63.00	to	64.00
No. 1 cupola cast		to	55.50
Stove plate		to	55.50
Cast iron car wheels		to	
Unstripped motor blocks			43.00
Current bless success assessed .		-	

New York

Brokers buying prices per gross ton on cars:
No. 1 hvy. melting \$37.00 to \$38.00
No. 2 hvy. melting 33.00 to 34.00
No. 2 dealer bungles 22.00 to 23.00
Machine shop turnings 19.00 to 11.00
Mixed bor, and turn 12.00 to 13.00
Shoveling turnings 15.00 to 16.00
Clean cast, chem. borings. 25.00 to 26.00
No. 1 machinery cast 39.00 to 40.00
Mixed yard cast 37.00 to 38.00
Heavy breakable cast 37.00 to 38.00
Stainless
18-8 prepared solids 200.00 to 205.00
18-8 turnings 85.00 to 90.00
430 prepared solids 85,00 to 90,00
430 turnings 20.00 to 25.00

Detroit

Brokers buying prices per gross ton	on cars:
No. 1 hvy. melting\$39.00 t	0 \$40.00
No. 2 hvy. melting 26.00 t	0 27.00
No. 1 dealer bundles 41.00 t	0 42.00
No. 2 bundles 22.00 t	0 23.00
No. 1 busheling 38.00 t	o 39.00
Drop forge flashings 39.00 t	0 40.00
Machine shop turn 19.00 t	o 20.00
Mixed bor, and turn 20.00 t	0 21.00
Shoveling turnings 20.00 t	0 21.00
Cast iron borings 23.00 t	0 24.00
Heavy breakable cast 41.00 t	0 42.00
Mixed cupola cast 49.00 t	o 50.00
Automotive cast 55.00 t	0 56.00
Stainless	
18-8 bundles and solids . 195.00 t	0 200,00
18-8 turnings 75.00	0 85.00
430 bundles and solids . 90.00	to 95.00

Barta

BOSTON					
Brokers buying prices	per	gı	ross tor	OF	cars:
No. 1 hvy. melting			.\$34.00	to	\$35.00
No. 2 hvy. melting .			. 25.00	to	26.00
No. 1 dealer bundles			. 36.0€	to	37.00
No. 2 bundles			. 19.00	to	20,00
No. 1 busheling			. 34.00	to!	35.00
Machine shop turn.					13.00
Shoveling turnings					16.00
Clean cast, chem. be	orin	gs			19.50
No. 1 machinery cas	t				41.00
Mixed cupola cast.					39.00
Heavy breakable cas	it		. 34.00	of (35.00

San Francisco

No. 1 hvy. melting	\$36.00
No. 2 hvy. melting	33.00
No. 1 dealer bundles	33.00
No. 2 bundles	22.00
Machine shop turn	17.00
Cast iron borings	17.00
No. 1 cupola cast	47.00

Fo

THE

Los Angeles

	38.06
No. 2 hvy. melting	36.00
	33.00
	20.00
	16.00
Shoveling turnings	18.00
Cast iron borings	18.00
Elec. furn. 1 ft and under	
	48.0
No. 1 cupola cast	47.00

Seattle

Jeanne										
No. 1 hvy. melting										\$35.0
No. 2 hvy. melting										33.0
No. 2 bundles										22.0
No. 1 cupola cast.										36.0
Mixed yard cast.	٠		0	D	0	0	0	0	0	00.0

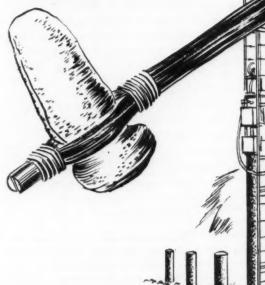
Hamilton, Ont.

Brokers buying prices per gros	8	ton	on cars:
No. 1 hvy. melting			\$32.25
No. 2 hvy. melting			28.25
No. 1 dealer bundles	×		32.25
			22.75
Mixed steel scrap			24.25
Bush., new fact., prep'd			32.25
			26.25
Machine shop turn	*		14.00
Short steel turn	×		17.00
Mixed bor, and turn			13.00
Rails, rerolling			37.00
Cast scrap	41	6,50	to 48.00

Houston

Brokers buying prices	per	gross	ton	on cars:
No. 1 hvy. melting				\$34.00
No. 2 hvy. melting				31.00
No. 2 bundles				20.00
Machine shop turn.				16.00
Shoveling turnings				20.00
Cut structural plate				
2 ft & under		84	8.00	to 49.00
Unstripped motor bl	ocks	8 3	9.50	to 40.50
Cupola cast		4	6.00	to 47.00
Heavy breakable cas	st	3	4.00	to 35.00





For the purchase

or sale of
iron or steel scrap
phone or write . . .

"Your Chicago Broker"

Early man used hammers of wood, stone, deer horn, and bronze to open nuts, drive nails or pound poles into the ground. Later, iron and steel were fashioned into specialized hammers of various shapes and sizes for the carpenter, stone cutter, surgeon, silversmith—and even into battering rams for use as war machines.

The Greeks and Romans effectively developed these weapons, some with metal heads weighing up to two tons, to destroy the walls of a besieged city; at Jerusalem the Romans employed battering rams with terrible effect.

Modern adaptations of the hammer include such mechanical devices as the pneumatic riveter, the staple gun, the pile driver. Today's workers in wood, stone and metals require many thousands of hammers, hand tools and power tools, to meet the nation's needs. And to assure the necessary tonnage of iron and steel, an unfailing supply of scrap must be always available.

M. S.

M. A. PLAD

COMPANY

231 S. La Salle St., Chicago

Telephone ANdover 3-3900

Aluminum Makers Wait for Kaiser

The other major aluminum producers aren't doing or saying anything until Kaiser settles with the Steelworkers.

There may be a delay until USW chief McDonald can squeeze Kaiser into his schedule.

■ It's hardly ever been this quiet in the aluminum industry. That is, considering it's in the middle of a tense labor situation.

The producers just aren't talking about what they expect in the upcoming talks between Kaiser Aluminum and the United Steelworkers, or what their subsequent actions might be.

Some in the trade believe the silence is more eloquent that anything the producers could say at this point.

Calm Prevails — One observer notes the industry is "calmer today than it has been for some time." He makes an educated guess that the producers aren't unhappy about the possibility that Kaiser will settle.

Another aluminum man reports there is no apprehension apparent in the industry over what kind of a settlement Kaiser is likely to negotiate.

In the Cards—At this point there seems to be little doubt that (1) Kaiser Aluminum & Chemical Co. will have no real trouble coming to an agreement with the USW, and (2) the general objectives, if not the actual figures, will follow very closely the agreement between Kaiser Steel and the union.

Because of some basic differences

in the structures of the two industries, the actual wage and fringe hikes are likely to be slightly less for aluminum companies.

A Kaiser source figures the steel settlement, translated directly to aluminum, would cost about 1¢ per lb of basic aluminum produced. There is also little doubt that the companies would like to get this back. Their justification is likely to be that the aluminum price, unlike steel, has moved down as well as up in the last few years and is now somewhat below what it was a few years ago.

Wait a Bit—There may be some delay before Kaiser and the Steelworkers hammer out a new aluminum pact. The problem is that Edgar Kaiser, who leads the management negotiating team, wants to deal with David J. McDonald, president of the USW, and his first string negotiators.

One reason: Mr. Kaiser is aiming, long range, for arrangement in aluminum similar to the one he is working toward in steel; that is doing away with contract expiration dates. He won't try to accomplish this at this particular session. But he would like to see the current contract set up so that it could easily be adapted sometime in the future.

Why—With a Taft-Hartley injunction battle on his hands and the necessity of constant negotiating with Big Steel, it may be a little while before Mr. McDonald can squeeze out time to talk with Mr. Kaiser.

Basis of the continuing contract idea is a nine-man committee; three

from the union, three from management, and three disinterested but knowledgable members to look after the public interests. A running tabulation would be kept on increases in production, costs, market and price structures, and adjustments in wages and fringe benefits would be made as the committee felt they were justified.

Secondary Aluminum

Carl H. Burton, secretary of the Aluminum Smelters Research Institute, told a recent gathering of the Philadelphia Metals Assn. that by 1990 the annual total of old and new aluminum scrap recovery should be about 2.175 million tons. This would be an increase of about 1000 pct over current levels.

Tin prices for the week: Oct. 28 —101.625; Oct. 29—101.625; Oct. 30—101.50; Nov. 2—101.375; Nov. 3—101.25.*

* Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in OCTOBER based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd	
Conn. Valley-	30.75
Copper, Lake	31.50
Straits Tin, New York-	102.214
Zinc, E. St. Louis	12.21
Lead. St. Louis	12.80
Aluminum ingot-	26.80

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum Inget	26.80	26.10	8/1/58
Copper (E)	30-31.50	30.00	9/9/59
Copper (CS)	33.00	30.00	9/1/59
Copper (L)	31.50	30.00	9/9/59
Lead, St. L.	12.80	11.80	8/24/59
Lead, N. Y.	13.00	12.00	8/24/59
Magnesium inget	36.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	150-100	162-182	8/1/59
Zinc, E. St. L.	12.50	12.5-13	11/2/59
Zinc, N. Y.	13.00	13-13.5	11/2/59
	. 000/ 1		D. (F)

ALUMINUM: 99% Ingot COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; Other primary prices, pg. 140.

BEND YOUR PROFIT CURVE UPWARD WITH "BUFFALO" BENDING ROLLS

"Buffalo" Bending Rolls will cut costs, increase profits in your production bending operations because they're fast, versatile, accurate. Satisfied users report faster, higher quality output with fewer rejects.

Hundreds of shops, large and small, use them for rapid bending of circles, segments and spirals. Angles, rounds, squares, tubes, beams, channels, flats and many special shapes are handled with ease. Quick, easy roll changing for different structural shapes and sizes. Valuable setup time is saved by the "Buffalo" hydraulic top roll adjustment. With this, the upper roll is easily positioned or released in seconds.

Helping to speed operations is the exclusive "Buffalo" "Leg-In"

Attachment. This simplifies bending of angles leg-in, formerly very difficult. Prevents material from twisting or getting out-of-square; also acts as a gauge when bending a run of circles to the same diameter.

"Buffalo" Bending Rolls are available in a number of sizes to handle all types of work, from small fabrication jobs to the heaviest applications. For full information, use coupon below — or call your "Buffalo" machine tool dealer.

All "Buffalo" Machine Tools bring you the extra "Q" Factor—the built-in QUALITY that provides trouble-free satisfaction and

long life,



BUFFALO FORGE COMPANY

TELL MELLE

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.
Please Send Me Complete Facts on "Buffalo" Bending Rolls.

NAME_____TITLE

RILLING PUNCHING SHI

SHEARING

.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant) Flat Sheet (Mill Finish and Plate) ("F" temper except 6061-0)

Alloy	.032	.081	.136	. 250- 3.
1100, 3003	45.7	43.8	42.8	43.3
	53.1	48.4	46.9	46.0
	50.1	45.7	43.9	44.9

Extruded Solid Shapes

	F	2	c	to	DE	*						١	6063 T-5	6062 T-6
6-8													42.7-44.2	51.1-54.8
12-14								۰			,	J	42.7-44.2	52.0-56.5
24-26 36-38													43.2-44.7	62.8-67.5 86.9-90.5

Screw Machine Stock-2011-T-3

Size*	34	34-34	%-1	134-134		
Price	62.0	61.2	59.7	57.3		

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed) Sheet and Plate

Type↓ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand, Grade		67.9	69.0	77.9	103.1
AZ31B Spec		93.3	95.7	108.7	171.3
Tread Plate	*****	70.6	71.7		
Tooling Plate	73.0				

Extruded Shapes

factor->	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec, Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZARA	AZ024 AZ01	C (Sand Casting)	40.75	(Valuence Tow

NICKEL, MONEL, INCONEL

(Base prices t.o.b. mill)

"A"	" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod. bar. HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube .	157	129	200
Shot, blocks		87	

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	54.63		52.86	55.82
Brase, Yellow	48.65	49.19	48.50	52.06
Brass, Low	51.48	52.02	51.42	54.79
Brase, R L	52.48	53.02	52.42	55.79
Brass, Naval	53.29		47.10	56.70
Munts Metal	51.35		46.66	
Comm. Bs.	53.92	54.46	53.86	56.98
Mang. Bs.	56.62		50.28	
Phos. Bs. 5%	75.34		75.84	

TITANIUM

(Base prices, f.o.b. mill)

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, \$7.25\$8.50; alloy, \$18.40-\$17.00. Plate, HR, commercially pure, \$5.25-\$6.00; alloy, \$8.00-\$10.00.

Wire, rolled and/or drawn, commercially pure, \$5.75-\$6.25; alloy, \$7.75-\$10.00; Bar, HR or forged, commercially pure, \$4.25-\$6.00; alloy, \$4.25-\$7.50; billets, HR, commercially pure, \$3.55-\$4.10; alloy, \$3.55-\$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads) 85-5-5 ingot

NO.	115								*								Z9.Z
No.	120																
No.	123																27.00
80-10-	10 in	E	0	٤													
No.	305																33.50
No.	315																31.50
88-10-	2 ing	O	t														
No.	210																42.00
No.	215																37.71
No.	245																33.50
Yellow	r ing	nt															
No.	405								*							*	23.7
Mangi	nese	1	bi	re	01	n:	2	e									
	491																96 71

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

0.30 copper max	25.00-25.25
0.60 copper max	
Piston alloys (No. 132 ty	pe)26.75-27.75
No. 12 alum. (No. 2 grad	e) 23.50-24.00
108 alloy	
195 alloy	26.50-27.50
13 alloy (0.60 copper max	
AVS-679 (1 not gine)	

Steel deoxidizing aluminum notch bar

d. aug.									
Grade	1-95-971/2	%							.24.00-25.00
Grade	2-92-95%								.22.75-23.75
Grade	3-90-92%								.21.75-22.75
Grade	4-85-90%	-	Ε	9					.21.25-22.25

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ ments of 20,000 lb and over	
He	avy Turnings
Copper 27	1/2 26 %
Yellow brass 21	18 1/8
Red brass 24	% 23 %.
Comm. bronze 25	
Mang. bronze 19	18 7/8
Free cutting rod ends. 20	1/6

Customs Smelters Scrap
(Cents per pound carload lots, delivered to refinery)
29 1/2

No. 1 copper	wire							29 1/2
No. 2 copper	wire	×				*		26 1/2
Light copper								24 14
*Refinery br	ass .						4. 6	24%
Copper beari					8			24
*Dry copp	er cor	LU	CER	L.				

Ingot Makers Scrap

(Cents per pound carload lots, delivered

No. 1 copper wire	29 1/2
No. 2 copper wire	26 1/2
Light copper	24
No. 1 composition	23
No. 1 comp. turnings	22 1/2
Hvy. yellow brass solids	16 1/2
Brass pipe	16
Radiators	18

		A	1	u	93	a	is	11	6	m	į.						
Mixed	old cast.	×						*	*	*	×	*	*	*	1	4	15
	new clips						*	*		*	*						1/2-17 1/2-15 1/4

Dealers' Scrap (Dealers' buying price f.o.b. New York in cents per pound)

Copp	er and	Brass	6								
No 1	conner	wire						26	1/2-	27	
No. 2	conner	Wire						24	Section.	24	1/2
Light	copper							22	Married .	22	3/2
Auto	radiato	ra (u	nsw	ea	te	1)		1.5	-	19	3/2
No. 1	compos	ition .				* *	*	19	1/2-	20	
No. 1	compo	sition	tur	nii	ng	S.		18	1/	18	13
Cocks	and fa	ucets	***	* *		2 3	×	10	74-	10	74
Clean	heavy	yellov	V DE	'a.s.	8	* *		10	12	12	2/
Brass	pipe .	* * * * * * *		* *		* *	*	1.5	12	16	74
New	soft bra	88 CII	ppin	gs		0 0	0	10	32	19	1/.
No. 1	brass r	od tu	LIIII	gs		* *		12	74	10	78

Aluminum 7 ½ 8 Aluminum crankcase 11 ¼ -11 ½ 1100 (2s) aluminum clippings 15 -15 ½ Old sheet and utensils 11 ¼ -11 ½ Borings and turnings 7 - 7 ½ Industrial castings 11 ¼ -11 ½ 2020 (24S) clippings 12 ½ -13

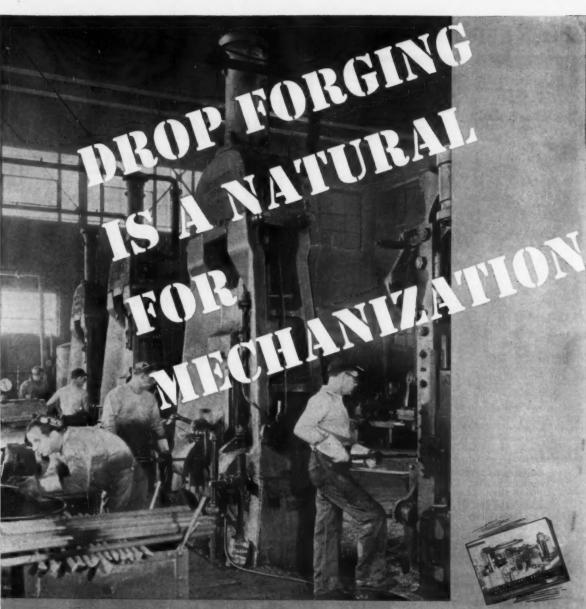
Nickel and Monei Pure nickel clippin	8						*				2-54
Old die cast scrap									2	1/2	234
Zinc routings										-	
Old zinc						é		2		1/4-	
New zinc clippings		×	×	Ė	*		×	×		1/4-	

1	Pure I	ickel c	lippi	ngs								52-0	14
(Clean	nickel	turni	ngs	3		* 1					40	
		anodes										52-8	
		rod er										52-5	
1	New 1	fonel c	lippi	ngs								30-3	
		Monel										20-2	
		eet Mo										26-2	10
1	Nickel	silver	clip	ping	ζB	0	n	n	X	eq	1	18	
1	Nickel	silver	turi	ning	58	,	n	ni	X	ed	ı	15	

Leod Soft scrap lead Battery plates (dry) Batteries, acid free

Miscellaneous
Block tin 77 -78
No. 1 pewter 59 -60
Auto babbitt 40 -41
Mixed common babbitt 9%-10%
Solder joints 14 —14 ½
Siphon tops 1014—1034
Siliali Iounaly type
Monorabe
Lino, and stereotype 9\(\frac{4}{4} - 9\) \(\frac{8}{4} - 8\) \(\frac{4}{4} - 8\) \(
Hand picked type shells 6 - 6 %
Lino, and stereo, dross 2% - 3%
Electro dross 2% - 31/4

TH



NE important feature of automatic production is the storage of shape in dies. This is also the basis of closed die forging—"drop forging". Chambersburg, pioneer builder of equipment for making drop forgings, today builds tools that will shape forgeable materials to close tolerances by a combination of carefully designed die configurations, with

precisely controlled forging blows and a fixed pattern of mechanized stock manipulation. When used with complementary shearing, heating, and trimming equipment, fully automatic or semi-automatic production lines are created which are capable of increased output at lower costs.

CHAMBERSBURG ENGINEERING CO.
CHAMBERSBURG • PENNSYLVANIA

A new publication, "The Automatic Production of Forgings in Closed Dies" provides the latest information on how to adapt these new developments to your drop forging operations. Write today for Bulletin 87-L-9.

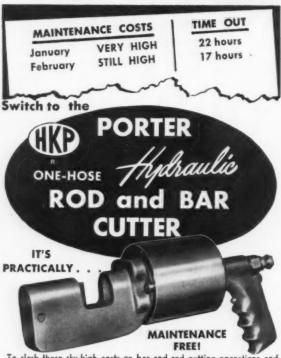
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"THE HAMMER BUILDERS"

Designers and Manufacturers of

THE IMPACTER

WHY KEEP THE UPKEEP?



To slash those sky-high costs on bar and rod cutting operations and maintenance in your mill you need the superbly efficient, rugged, trouble-free one-hose PORTER HYDRAULIC ROD and BAR CUTTER. An all-job team of 3 Cutterheads and 5 Power Unit sizes offers just the right combination to handle any of your cutting work - faster better and at far lower cost. Here's why:

CONTINUOUS TROUBLE-FREE OPERATION CUTTERHEAD PROTECTION - that eliminates con stant "TIME OUT" and HIGH MAINTENANCE COSTS!

- LONGER BLADES with more bearing surface and rigid alignment eliminate side thrust and blade breakage.
- FILTERED AIR taken into the cylinder is forced out around the movable blade on each cut - eliminates the danger of
- dirt reaching bearing surface causing oil leakage and wear.

 CONCENTRIC DESIGN eliminates excessive wear of cyl-
- . LARGER CYLINDER AREA allows the tool to cut capacity stock at a lower operating pressure, resulting in longer life for seal and hose
- . SAFE, 12 VOLT CONTROL SWITCH at the cutterhead
- gives instant finger-tip performance.
 "KEY-POINT" wear and replacement reduced to the minimum because of these exclusive HKP features.

A TRUE HYDRAULIC SYSTEM with these efficient, maintenance-saving features:

- . CONTROL VALVE big and accurate enough for all in-
- dustrial work. Solenoid operated.

 EASY TO CHANGE RESERVOIR TYPE 10-MICRON OIL FILTER.
- · PLUS. many other exclusive HKP features.

Ask to have a Porter Engineer tell you how the 3 CUTTERHEAD sizes and 5 HYDRAULIC POWER UNITS can provide the exact combination for your requirements.

OR — WRITE FOR COMPLETE OR — WRITE FOR COMPLETE PORTER HYDRAULIC ROD and BAR CUTTER FOLDER.



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H. K. PORTER, INC.

Somerville 43, Mass

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Liquidation Sale

METAL WORKING MACHINERY AND EQUIPMENT

of

SHARPE & FLYNN CORPORATION Stokely St. above Roberts Ave. (Germantown) Phila., Pa.

WEDNESDAY. NOV. 18, 1959 AT 10 A. M. ON PREM.

Exhibition: From Nov. 11 to day of sale (excluding Sats. and Sundays) from 9 to 5 each day, or by appointment.

Press Brakes: Cincinnati 150 ton, Pacific 390 ton, Verson 45 ton. Bending Rolls: Webb model 6L (1950) and Pexto. Radial Drills: Carlton 5' and 3'. Shears: Niagara #K.L., 10', m.d.; also Pexto, Whitney, Gallagher. Metal Saws: Do All, type 36W (1953); also Delta cut-off, Marvel Band & Hack Saws. Lathes: Axelson Quick Change, model A20 (1950); Monarch, Rockford, McCabe, Atlas Bench. Milling Machines: Milwaukee #4 Universal, model K (1950); Milwaukee Simplex and Cincinnati Nr. 2 Plain. Air Compressors: Ingersoll-Rand 40 h.p. horizontal unit, Gardener Denver. Presses: Ferracute Power and Punch models, Wiedeman hand bench types. Drill Presses. Arc Welders and Positioners: Koehring 10 ton Crane, Towmotor Fork Lift, electric hoists. Office Equipment. Miscel. Equipment.

Write for Illustrated Circular SAMUEL T. FREEMAN & CO., Auctioneers 1808 Chestnut St., Phila. 3, Pa.

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ST PRI

IRON A

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9	STEEL	BILLE	TS, BLO	OMS,	PIL-		SHAPES				emp	I.D.		
			SLABS		ING	STE	RUCTUR	ALS			STR	IP		
F	PRICES	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot-	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Mot- rolled	Alloy Cold- rolled
1	Bethiebem, Pa.			\$119.00 B3		5.55 B3	8.10 B3	5.55 B5						
	Buffalo, N. T.	\$80.00 R3,	\$99.50 R3, B3	\$119.00 R3,	6.50 B3	5.55 B3	8.10 B3	5.55 B3	5.10 B3, R3	7.425 S10, R7	7.575 B3			
-	Phila., Pa.	B3	В)	B3						7.875 P15				
	Harrison, N. J.					-		-						15.55 C/
	Conshehocken, Pa.		\$104.50 /12	\$126.00 /42					5.15 A2		7.575 A2			-
	New Bedford, Mass.									7.875 R6				
	Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		5.55 B3	8.10 B3							
EAST	Boston, Mass.									7.975 T8				
m	New Haven, Conn.									7.875 DI				
	Baltimore, Md.									7.425 T8				15.90 T8
	Phoenixville, Pa.					5.55 P2		5.55 P2						
	Sparrows Pt., Md.								5.10 B3		7.575 <i>B3</i>			
	Now Britain, Bridgoport, Wallingford, Conn.			\$119.00 N8						7.875 W1,57				
	Pawtucket, R. I. Worcester, Mass.									7.975 N7, A5				15.90 N7 15.70 78
-	Alten, III.							_	5.30 LI					
	Ashland, Ky.						-	-	5.10 A7		7.575 A7			
	Canton-Massillon, Dover, Ohio		\$102.00 R3	\$119.00 R3, \$114.00 T5						7.425 G4		18.88 G4		
	Chicago, Franklin Park, Evanston, III.	\$80.00 UI, R3	\$99.50 UI, R3,W8	\$119.00 U1, R3,W8	6.50 UI	5.50 U1, W8,P13	8.05 UI, YI,W8	5.50 UI	S.10 W8, N4,A1	7.525.A1, T8, M8	7.575 W8		8.40 W8, S9,13	15.55 A S9,G4,7
	Cloveland, Ohio									7.425 A5, J3		10.75 A5	8.40 J3	
	Detroit, Mich.			\$119.00 R5					5.10 G3, M2	7.425 M2, SI, DI, PII	7.575 G3	10.80 SI		
	Anderson, Ind.									7.425 G4				
WEST	Gary, Ind. Harber,	\$80.00 UI	\$99.50 UI	\$119.00 UI,		5.50 UI,	8.05 UI,	5.50 /3	5.10 UI.	7.425 Y/	7.575 UI,	10.90 Y/	8.40 UI,	
E W	Indiana			YI		13	J3		13,Y1		13,Y1		YI	-
MIDDLE	Sterling, III.	\$80.00 N4				5.50 N4	7.75 N4	5.50 N4	5.20 N4					
N	Indianapolis, Ind.									7.575 R5			0.40.40	15.70 R
	Nowport, Ky.					-			5.10 A9			10.00 83	8.40 A9	10.00.01
	Niles, Warren, Ohio Sharon, Pa.		\$99.50 SI; C10	\$119.00 C10,S1					\$.10 R3, SI	7.425 R3, T4,SI	7.575 R3, SI	10.80 R3, SI	8.40 SI	15.55 SI
	Owenshere, Ky.	\$80.00 G5	\$99.50 G5	\$119.00 G5										
	Pittsburgh, Midland, Butler, Aliquippa, McKeespert, Pa.	\$80.00 UI, P6	\$99.50 U1, C11,P6	\$119.00 UI, CII,B7	6.50 UI	5.50 UI, J3	8.05 UI, J3	5.50 UI	5.10 P6	7.425 <i>J3,B4</i> 7.525 <i>E3</i>			8.40 .59	15.55 .59
	Weirten, Wheeling, Follansbee, W. Va.			-	6.50 UI, W3	5.50 W3		5.50 W3	5.10 W3	7.425 W5	7.575 W3	10.80 H/3		
	Youngstown, Ohio	\$80.00 R3	\$99.50 YI, CIO	\$119.00 Y/			8.85 Y/		5.10 U	7.425 YI,R5	7.575 UI,	10.95 Y/	8.40 UI, YI	15.55 R:
	Fontana, Cal.	\$90.50 K1	\$109.00 K1	\$140.00 K1		6.30 KI	8.85 K1	6.45 KI	5.825 K1	9.20 K1				-
	Geneva, Utah		\$99.58 C7			5.50 C7	8.85 C7							
	Kansas City, Me.					5.60 S2	8.15 S2						8.65 S2	
	Los Angeles, Terrance, Cal.		\$109.00 B2	\$139.00 B2		6.20 C7, B2	8.75 B2	-	5.85 C7, B2	9.30 CI,R5			9.60 B2	17.75 J3
WEST	Minnegua, Colo.					5.80 C6			6.20 C6	9.375 C6				
-	Portland, Ore.					6.25 02								-
	San Francisco, Niles, Pittsburg, Cal.		\$100.00 B2			6.15 B2	8.78 B2		5.85 C7, B2					
	Seattle, Wash.	-/	\$109.00 B2			6.25 B2	8.80 B2		6.10 B2					
	Atlanta, Ga.					5.70 48			5.10 A8					
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$80.00 77	\$99.50 72			5.50 T2 R3,C/6	8.05 72		5.10 T2, R3,C/6		7.575 T2			
60	Houston, Lone Star, Texas		\$104.50 SZ	\$124.00 S2		5.60 SZ	8.15 S2						8.65 S2	

E	RON AGE		Italics iden	tify producers l	isted in key a	t end of table	. Base price	s, f.e.b. mill, i	a cents per lb.	, unless otherv	vise noted. E.	atras apply.	
	STEEL				SHE	ETS				WIRE ROD	TINPI		
ŀ	PRICES	Hot-rolled 18 ga. & hvyr.	Cold- rolled	Galvanized (Hot-dipped)	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb, base box	1.25-lb. 0.25-lb.	
	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 <i>B3</i>	9.275 B3		6.40 W6	deduct 35¢ fr	ted mfg. terne rom 1.25-lb.	
1	Claymont, Del.										coke base ho lb. 0.25 lb. a	x price, 0.75 dd 55¢.	
1	Coatesville, Pa.										BLACKPLATE 55 to 128		
1	Conshohocken, Pa.	5.15 /12	6.325 A2				7.575 A2		-		1b. deduct \$2 1.25 lb. coke	base box.	
	Harrisburg, Pa.										° COKES:		
1	Hartford, Conn.										**ELECTRO	: 0.50-lb. add add 65c; 1.00-	
1	Johnstown, Pa.									6.40 B3	lb. add \$1.00 1.00 lb./0.25	Differential	
	Fairless, Pa.	5.15 UI	6.325 UI				7.575 UI	9.325 UI			\$10.50 UI	\$9.20 UI	
	New Haven, Conn.	2.13 07	6.323 01				1.01007	9.32.001			10.30 01	***************************************	
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$9.10 B3	
	Worcester, Mass.									6.70 A5			
	Trenton, N. J.												
-	Alton, Ill.									6.60 L1			
	Ashland, Ky.	5.10 A7		6.875 A7	6.775 A7		7.525 A7			0.00 27			
	Canton-Massillon, Dover, Ohio	3.10 A/		6.875 R1. R3	6.113 /1/		1.363 AI						
	Chicago, Joliet, III.	5.10 W8, A1					7.525 UI, W8			6.40 A5, R3,W8			
	Sterling, Ill.									6.50 N4, K2			
	Cleveland, Ohio	5.10 R3,	6.275 R3, J3	7.65 R3°	6.77\$ R3		7.525 R3,	9.275 R3,		6.40 A5			
	Detroit, Mich.	\$.10 G3, M2	6.275 G3, M2				7.525 G3	9.275 G3					
1	Newport, Ky.	5.10 49	6.275 A9										
WEST	Gary, Ind. Harbor, Indiana	5.10 UI, I3, YI	6.275 UI, 13, YI	6.875 UI.	6.775 UI, 13, YI	7.225 UI	7.525 U1, Y1,13	9.275 UI, YI		6.40 Y/	\$10.40 UI, YI	\$9.10 I3, UI, YI	7.85 UI, YI
LE	Granite City, Ill.	5.20 G2	6.375 G2	6.975 G2								\$9.20 G2	7.95 G2
MIDDLE	Kokomo, Ind.			6.975 C9						6.50 C9			
E	Mansfield, Ohio	5.10 E2	6.275 E2		-	7.225 E2							
	Middletown, Ohio		6.275 A7	6.875 A7	6.775 A7	7.225 A7							
	Niles, Warren, Ohie Sharen, Pa.	5.10 R3, S1	6.275 R3	6.875 R3 7.65 R3*	6.775 SI	7.225 SI*, R3	7.525 R3, S1	9.275 R3,				\$9.10 R3	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	\$.10 UI, J3,P6	6.275 U1, J3,P6	6.875 UI, J3 7.50 E3°	6.775 UI		7.525 U1, J3	9.275 UI, J3	10.025 UI, J3	6.40 A5, J3,P6	\$10.40 UI, J3	\$9.10 UI,	7.85 UI, J3
	Portsmouth, Ohio	5.10 P7	6.275 P7							6.40 P7			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 W3, W5	6.275 W3, F3,W5	6.875 W3, W5 7.50 W3*		7.225 W3, W5	7.525 W3	9.275 W3			\$10.40 W5, W3	\$9.10 W5, W3	7.85 W5
	Youngstown, Ohio	5.10 UI, YI	6.275 Y/	7.50 /3*	6.775 Y1		7.525 YI	9.275 YI		6.46 Y/			
_	Fontana, Cal.	5.825 K1	7.40 K1				8.25 K1	10.40 KI			\$11.05 K1	\$9.75 K1	
	Geneva, Utah	5.20 C7				-							
_	Kansas City, Mo.									6.65 52			
WEST	Los Angeles, Torrance, Cal.									7.20 B2			
	Minnequa, Cele.									6.65 C6			
	San Francisco, Niles, Pittsburg, Cal.	5.80 C7	7.225 C7	7.625 C7						7.20 C7	\$11.05 C7	\$9.75 C7	
SOUTH	Atlanta, Ga. Fairfield, Ala.	5.10 T2,	6.275 T2,	6.875 T2,	6.775 T2					6.40 T2,R3	\$10.50 T2	\$9.20 T2	
SO	Alabama City, Ala.	R3	R3	R3					-	0.00.00			-
	Houston, Texas		1	1	1	1	1	1	1	6.65 S2	1	1	

* Electrogalvanized sheets,

(Effective Nov. 2, 1959)

•7.425 at Sharon-Niles is 7.225

S

	STEEL			BAI	RS				PLAT	TES		WIRE
	STEEL	1	1								1	
F	PRICES	Carbon† Steel	Reinforc-	Cold Finished	Alloy Hot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
	Bethlehem, Pa.				6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N. Y.	5.675 R3,B3	5.675 R3,B3	7.70 85	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3				8.00 W6
	Clayment, Del.							5.30 C4		7.50 C4	7.95 C4	
	Coatesville, Pa.							5.30 L4		7.50 L4	7.95 L4	
-	Conshohocken, Pa.							5.30 A2	6.375 A2	7.50 A2	7.95 A2	
	Harrisburg, Pa.							5.30 P2	6.375 P2			
	Milton, Pa.	5.825 M7	5.825 M7	8.15 R3		A 995 D2						
	Hartford, Conn. Johnstown, Pa.	5.675 B3	5.675 B3	8.13 K)	6.725 B3	9.325 R3	8.30 B3	5.30 B3		7.50 B3	7.95 B3	8.00 B3
EAST	Fairless, Pa.	5.825 UI	5.825 UI		6.875 UI		6.30 27	3.34 07		1.30 13	1.30 07	0.00 05
	Newark.	3.023 07	2.02.07	8.10 W/O.		9.20 W/0,					-	
	Camden, N. J.			P10		P10						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 W/O 8.15 J3	6.80 N8	9.175 N8						
	Sparrows Pt., Md.		5.675 B3					5.30 B3		7.50 B3	7.95 B3	8.10 B3
	Palmer, Worcester, Roadville, Mansfield, Mass.			8.20 B5, C14		9.325 A5,B5						8.30 A5, - W6
	Spring City, Pa.			8.10 K4		9.20 K4						
_	Alton, III.	5.875 L/										8.20 L1
	Ashland, Newport, Ky.							5.30 A7, A9		7.50 A9	7.95 A7	
	Canton, Massillon, Mansfield, Ohio	6.15° R3		7.65 R3,R2	6.725 R3 6.475 T5	9.025 R3,R2 8.775 T5		5.30 E2				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 U1, R3, W8, N4, P13	5.675 U1,R3, N4,P13,W8 5.875L1	7.65 A5, W10,W8, B5,L2,N9	6.725 UI,R3, W8	9.025 A5, W10,W8, L2,N8,B5	8.30 UI,W8, R3	5.30 U1, A1, W8, 13	6.375 UI	7.50 UI, W8	7.95 U1, W8	8.00 A5,R W8,N4, K2,W7
	Cleveland, Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5,C13, C18		9.025 A5, C13,C18	8.30 R3	5.30 R3,J3	6.375 J3		7.95 R3,J3	8.86 A5, C13,C18
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3 7.85 P8,B5	6.725 R5,G3	9.025 R5 9.225 B5,P3,	8.30 G3	5.30 G3		7.50 G3	7.95 G3	
	Duluth, Minn.			7.65 R5		P8						8.00 A5
WEST	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1,13, Y1	5 675 U1,13, Y1	7.65 R3,J3	6.72\$ U1,13, Y1	9.025 R3,M4	8.30 UI, YI	5.30 U1,13, Y1	6.375 <i>J</i> 3,	7.50 UI,	7.95 UI, YI, I3	8.10 M4
JLE	Granite City, III.					-		5.40 G2	-			
MIDDLE	Kokomo, Ind.	-	5.775 C9									8.10 C9
ell.	Sterling, Ill.	5.775 N4	5.775 N4					5.30 N4				8.10 K2
	Niles, Warren, Ohio Sharon, Pa.			7.65 C10	6.725 C/0,	9.025 C10		5.30 R3,S1		7.50 SI	7.95 R3, S1	
	Owensboro, Ky.	5.675 G5		-	6.725 G5							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 U1,J3	5.675 U1, J3	7.65 A5,B4, R3,J3,C11, W10,S9,C8, M9	6.725 U1, J3, C11, B7	9.025 A5, W10,R3,S9, C11,C8,M9	8.30 UI,J3	5.30 U1, J3	6.375 U1,J3	7.50 U1, J3,B7	7.95 U1, J3,B7	8.00 A5, J3,P6
	Portsmouth, Ohio											8.00 P7
	Weirton, Wheeling,							5.30 W5				
	Follansbee, W. Va.			B 47 11 111	# mon 111 501	0.000 311 511	9 90 517 517	2 90 211		9 Po . C		
5	Youngstown, Ohio	5.675 U1,R3, Y1	5.675 U1,R3, Y1	7.65 AI, YI, F2	6.725 UI, YI	9.825 YI,F2	8.30 U1, Y1	5.30 UI, R3, YI		7.50 Y/	7.95 UI, YI	8.88 Y/
П	Emeryville, Fontana, Cal.	6.425 <i>J</i> 5 6.375 <i>KI</i>	6.425 J5 6.375 K1		7.775 K1		9.00 K/	6.10 KI		8.30 K1	8.75 KI	
	Geneva, Utah							5.30 C7			7.95 C7	
	Kansas City, Mo.	5.925 S2	5.925 S2		6.975 52		8.55 S2					8.25 S2
WEST	Los Angeles, Torrance, Cal.	6.375 C7,B2	6.375 C7,B2	9.10 R3,P14, S12	7.775 B2	11.00 P14, S12	8.625 B2					8.95 B2
W	Minnequa, Colo.	6.125 C6	6.125 C6					6.15 C6				8.25 C6
	Portland, Ore.	6.425 02	6.425 02		1							
	San Francisco, Niles, Pittsburg, Cal.	6.375 C7 6.425 B2	6.375 C7 6.425 B2	11			8.675 B2					8.95 C7,C
	Seattle, Wash.	6.425 B2.N6, A10					8.675 B2	6.20 <i>E2</i>		8.40 BZ	8.85 B2	
	Atlanta, Ga.	5.875 //8	5.675 A8									8.09 48
SOUTH	Fairfield City, Ala. Birmingham, Ala.	5.675 T2,R3, C16		8.25 C/6			8.30 72	5.30 T2,R3			7.95 T2	8.00 T2,R
3	Houston, Ft. Worth,	5.925 S2	5.925 S2		6.975 S2		8.55 52	5.40 S2	-	7.60 52	8.05 52	8.25 S2

[†] Merchant Quality—Special Quality 35¢ higher. (Effective Nov. 2, 1959)

STEEL PRICES

Key to Steel Producers

With Principal Offices

- Al Acme Steel Co., Chicago
- 12 Alan Wood Steel Co., Conshohocken, Pa.
- Allegheny Ludlum Steel Corp., Pittsburgh
- American Cladmetals Co., Carnegie, Pa.
- 45 American Steel & Wire Div., Cleveland
- 46 Angel Nail & Chaplet Co., Cleveland
- Armco Steel Corp., Middletown, Ohio
- A8 Atlantic Steel Co., Atlanta, Ca. 49
- Acme-Newport Steel Co., Newport, Ky. A10 Alaska Steel Mills, Inc., Seattle, Wash.
- Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- Bethlehem Steel Co., Pacific Coast Div.
- Ri Bethlehem Steel Co., Bethlehem, Pa.
- B4 Blair Strip Steel Co., New Castle, Pa.
- 85 Bliss & Laughlin, Inc., Harvey, Ill.
- Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
- B7 A. M. Byers, Pittsburgh
- RR Braeburn Alloy Steel Corp., Braeburn, Pa.
- C1 Calstrip Steel Corp., Los Angeles C2 Carpenter Steel Co., Reading, Pa.
- C4 Claymont Products Dept., Claymont, Del.
- C6 Colorado Fuel & Iron Corp., Denver
- C7
- Columbia Geneva Steel Div., San Francisco Columbia Steel & Shafting Co., Pittsburgh C8
- Continental Steel Corp., Kokomo, Ind.
- C10 Copperweld Steel Co., Pittsburgh, Pa. C11 Crucible Steel Co. of America, Pittsburgh
- C13 Cuyahoga Steel & Wire Co., Cleveland
- C14 Compressed Steel Shafting Co., Readville, Mass.
- C15 G. O. Carlson, Inc., Thorndale, Pa.
- C16 Connors Steel Div., Birmingham
- C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
- DI Detroit Steel Corp., Detroit
- D2 Driver, Wilbur B., Co., Newark, N. J.
- D3 Driver Harris Co., Harrison, N. J.
- D4 Dickson Weatherproof Nail Co., Evanston, III.
- El Eastern Stainless Steel Corp., Baltimore E2 Empire-Reeves Steel Corp., Mansfield, O.
- E3 Enamel Products & Plating Co., McKeesport, Pa.
- FI Firth Sterling, Inc., McKeesport, Pa.
- Fitzsimons Steel Corp., Youngstown
- F3 Follansbee Steel Corp., Follansbee, W. Va.

- G? Granite City Steel Co., Granite City, Ill.
- G3 Great Lakes Steel Corp., Detroit
- G4 Greer Steel Co., Dover, O.
- G5 Green River Steel Corp., Owenboro, Ky.
- HI Hanna Furnace Corp., Detroit
- 12 Ingersoll Steel Div., New Castle, Ind.
- 13 Inland Steel Co., Chicago, Ill.
- 14 Interlake Iron Corp., Cleveland
- J1 Jackson Iron & Steel Co., Jackson, O. 12 Jessop Steel Corp., Washington, Pa.
- J3 Jones & Laughlin Steel Corp., Pittsburgh
- 14 Joslyn Mfg. & Supply Co., Chicago
- J5 Judson Steel Corp., Emeryville, Calif.
- KI Kaiser Steel Corp., Fontana, Calif.
- K2 Keystone Steel & Wire Co., Peoria
- K4 Keystone Drawn Steel Co., Spring City, Pa.
- L1 Laclede Steel Co., St. Louis
- L2 La Salle Steel Co., Chicago
- L3 Lone Star Steel Co., Dallas
- L4 Lukens Steel Co., Coatesville, Pa.
- MI Mahoning Valley Steel Co., Niles, O.
- M2 McLouth Steel Corp., Detroit
- M3 Mercer Tube & Mfg. Co., Sharon, Pa.
- M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
- M6 Mystic Iron Works, Everett, Mass.
- M7 Milton Steel Products Div., Milton, Pa.
- M8 Mill Strip Products Co., Chicago, Ill. M9 Moltrup Steel Products Co., Beaver Falls, Pa.
- NI National Supply Co., Pittsburgh
- N2 National Tube Div., Pittsburgh
- N4 Northwestern Steel & Wire Co., Sterling, Ill.
- No Northwest Steel Rolling Mills, Seattle
- Newman Crosby Steel Co., Pawtucket, R. I. N7
- N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
- N9 Nelson Steel & Wire Co.
- 01 Oliver Iron & Steel Co., Pittsburgh
- 02 Oregon Steel Mills, Portland
- P1 Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Steel Corp., Phoenixville, Pa.
- P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
- P4 Pittsburgh Coke & Chemical Co., Pittsburgh
- P5 Pittsburgh Screw & Bolt Co., Pittsburgh
- P6 Pittsburgh Steel Co., Pittsburgh P7 Portsmouth Div., Detroit Steel Corp., Detroit
- P8 Plymouth Steel Co., Detroit

- P9 Pacific States Steel Co., Niles, Cal.
- P10 Precision Drawn Steel Co., Camden, N. J.
- P11 Production Steel Strip Corp., Detroit
- P13 Phoenix Mfg. Co., Joliet, Ill.
- P14 Pacific Tube Co.
- P15 Philadelphia Steel and Wire Corp.
- R1 Reeves Steel & Mfg. Div., Dover, O.
- R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
- R3 Republic Steel Corp., Cleveland
- R4 Roebling Sons Co., John A., Trenton, N. J. Jones & Laughlin Steel Corp., Stainless and Strip Div. R5

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Seattle
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- R6 Rodney Metals, Inc., New Bedford, Mass.
- R7 Rome Strip Steel Co., Rome, N. Y.
- SI Sharon Steel Corp., Sharon Pa.
- S2 Sheffield Steel Div., Kansas City
- S3 Shenango Furnace Co., Pittsburgh
- S# Simonds Saw and Steel Co., Fitchburg, Mass.
- Sweet's Steel Co., Williamsport, Pa. 55
- S7 Stanley Works, New Britain, Conn.
- Superior Drawn Steel Co., Monaca, Pa. S8
- S9 Superior Steel Div. of Copperweld Steel Co., Carnegic, Pa.
- S10 Seneca Steel Service, Buffalo
- S11 Southern Electric Steel Co., Birmingham
- S12 Sierra Drawn Steel Corp., Los Angeles, Calif. \$13 Seymour Mfg. Co., Seymour, Conn.
- 71 Tonawanda Iron Div., N. Tonawanda, N. Y.
- 72 Tennessee Coal & Iron Div., Fairfield
- 73 Tennessee Products & Chem. Corp., Nashville
- 74 Thomas Strip Div., Warren, O.
- Timken Steel & Tube Div., Canton, O.
- 77 Texas Steel Co., Fort Worth
- 78 Thompson Wire Co., Boston
- Ul United States Steel Corp., Pittsburgh
 U2 Universal Cyclops Steel Corp., Bridgeville, Pa.
- U3 Ulbrich Stainless Steels, Wallingford, Conn.
 U4 U. S. Pipe & Foundry Co., Birmingham
- WI Wallingford Steel Co., Wallingford, Conn
- W2 Washington Steel Corp., Washington, Pa.
- W3 Weirton Steel Co., Weirton, W. Va.
- W4 Wheatland Tube Co., Wheatland, Pa.
- W5 Wheeling Steel Corp., Wheeling, W. Va.
- W6 Wickwire Spencer Steel Div., Buffalo
- W7 Wilson Steel & Wire Co., Chicago.
- W8 Wisconsin Steel Div., S. Chicago, Ill.
- W9 Woodward Iron Co., Woodward, Ala.
- W10 Wyckoff Steel Co., Pittsburgh W12 Wallace Barnes Steel Div., Bristol, Conn.
- YI Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

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Base discounts (pct) f.o.b. mills. Base price about \$200 per net ton.

							BUTT	WELD										SEAN	ILESS			
	1/2	ln.	34	In.	1	ln.	11/4	In.	11/2	In.	2	ln.	21/2-	3 In.	2	ln.	21/2	In.	31	ln.	31/2	4 In.
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Bik.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Bik.	Gal.	BIL.	Gal.	Blk.	Gal.	BIL	Gal.
Sparrows Pt. B3. Youngstown R3. Fontana K1 Fittsburgh J3. Alton, Ill. L1 Sharoa M3 Fairless N2 Pittsburgh N1 Wheeling W5. Wheatland W4	0.25 2.25 *10.75 2.25 0.25 2.25 0.25 2.25 2.25 2.25 2.2	*15.0 *13.0 *26.00 *13.0 *15.0 *13.0 *15.0 *13.0 *13.0 *13.0	3.25 5.25 *7.75 5.25 3.25 5.25 5.25 5.25 5.25	*9.0 *22.00 *9.0 *11.0 *9.0 *11.0 *9.0	6.75 8.75 *4.25 8.75 6.75 8.75 6.75 8.75 8.75	*6.50 *4.50 *17.50 *4.50 *6.50 *4.50 *4.50 *4.50 *4.50	9.25 11.25 *1.75 11.25 9.25 11.25 9.25 11.25	*5.75 *3.75 *16.75 *3.75 *5.75 *3.75 *3.75 *3.75	9.75 11.75 *1.25 11.75 9.75 11.75 9.75 11.75	+2.75	12.25 *0.75 12.25 10.25 12.25 12.25 12.25 12.25	*2.25 *15.25 *2.25 *4.25 *2.25 *4.25 *7.25 *2.25	13.75 0.75 13.75 11.75 13.75 11.75 13.75 13.75	*4.50 *2.50 *15.50 *2.50 *4.50 *2.50 *4.50 *2.50 *2.50	*12.25	*27.25 *27.25	+5.75 +5.75	+22.50 +22.50		*20.0	*1.75	*18.56
Youngstown YI Indiana Harber YI Lorain N2	2.25 1.25 2.25	*13.0 *14.0	5.25 4.25 5.25	*9.0	8.75 7.75 8.75	*4.50 *5.50	11.25 10.25 11.25	*3.75 *4.75 *3.75		*2.75 *3.75	12.25	*2.25 *3.25	13.75	*2.50 *3.50 *2.50		+27.25 +27.25			*3.25 *3.25			*18.56
EXTRA STRONG PLAIN ENDS Sparraws Pt. B3 Youngstown R3. Fairleas N2. Fontana K1. Pittsburgh J3. Atton, Ill. L1. Sharon M3	4.75 6.75 4.75 *6.25 6.75 4.75 6.75	*9.0 *7.0 *9.0 *7.0	8.75 10.75 8.75 *2.25 10.75 8.75 10.75	*3.0 *5.0 *3.0 *5.0 *3.0	13.75 11.75 0.75 13.75 11.75 13.75	1.50 *0.50 1.50 *0.50 1.50	1.25 14.25 12.25 14.25	0.25 *1.75 0.25 *1.75 0.25	14.75 12.75 1.75 14.75 12.75 14.75	1.25 *0.75 1.25 *0.75 1.25	15.25 13.25 2.25 15.25 13.25 15.25	1.75 +0.25 1.75 +0.25 1.75	15.75 13.75 2.75 15.75 13.75 15.75	0.50	*10.75	*24.75	+3.25	*19.0	*0.75	*16.50	4.25	*11.50
Pittsburgh NI	6.75 6.75 6.75 6.75 5.75 6.75	*7.0 *7.0 *7.0 *7.0 *8.0 *7.0	10.75 10.75 10.75 10.75 9.75 10.75	*3.0 *3.0 *3.0 *3.0 *4.0 *3.0	13.75 13.75 13.75 13.75 12.75 12.75		14.25 14.25 14.25 14.25 13.25 14.25	0.25 0.25 0.25 0.25 *0.75 0.25	14.75	1.25	15.25 15.25 15.25 14.25	1.75 1.75 1.75 0.75	15.75 15.75 15.75 14.75	0.50 0.50 0.50 0.50 *0.50	*10.7	*24.75	+3.2	*19.0	+0.75 +0.75 +0.75	*16.50	4.25	*11.5 *11.5 *11.5

Threads only, buttwold and seamless, 2½ pt. higher discount. Plain ends, buttwold and seamless, 3-in. and under, 5½ pt. higher discounts.

Galvanizad discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1½, 1½ and 2-in.
1½ pt.; 2½ and 3-in., 1 pt., e.g., sinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts.

East St. Louis aim: price now 12,30¢ per lb.

TOOL STEEL

F.o.b.	mill	-		-		/ A TO
W	Cr	V	Mo	Co	per lb	SAE
18	4	1	-	-	\$1.84	T-1
18	4	1	-	5	2.545	T-4
18	4	2	-	-	2.005	T-2
1.5	4	1.5	8	-	1.20	M-1
6	4	3	6	-	1.59	M-3
6	4	2	5	-	1.345	M-2
High-	carbo	n chr	omiur	n	.955 I)-3, D-5
Oil ha	rdene	d ma	ngan	989	.505	0-2
Specia	l car	bon			.38	W-1
Extra	cart	on .			.38	W-1
Regul	ar ce	rbon			.325	W-1
Wa	rehou	se pr	ices o	n and	east of	Missis-

sippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

~	LAD SIE	-	Base pri	ces, cent	s per lb f.o.b
		Plate (L4, C4,	A3, J2)	Sheet (12)
_	Cladding	10 pct	15 pct	20 pct	20 pct
	302				37.50
	304	28.80	31.55	34.30	40.00
-	316	42.20	46.25	50.25	58.75
-	321	34.50	37.75	41.05	47.25
Stainbear	347	40.50	44.65	48.55	57.00
ĕ	405	24.60	26.90	29.25	
	410	22.70	24.85	27.00	
	430	23.45	25.65	27.90	*****
				1	

CR Strip (S9) Copper, 10 pct, 2 sides, 42.50; 1 side, 35.85.

RAILS, TRACK SUPPLIES

F.a.b. Mill Cents Per Lb	No. 1 Std.	Light Rails	Joint Bars	Track Spiles	Tie Plates	Track Bolts Uniresied	
Bessomer UI. Cleveland R3. So. Chicago R3. Enaloy T2. Fairfield T2. Gary UI. Huntington, C16. Ind. Harber 13. Johnstown B3. Joint UI.	5.75 5.75	6.725 6.725 6.725 6.725	7.25	10. 10 10. 10 10. 10	6.875 6.875	15.35	
Kansas City S2. Lackawanna B3. Lackawanna B3. Minnequa C6. Pittsburgh P5. Pittsburgh J3. Seattle B2. Steelton B3. Struthers Y1. Terrance C7. Williamsport S5. Youngsiown R3.	5.75 5.75 5.75	6.725 7.225	7.25 7.25 7.25 7.25	10.10	6.875 6.875 6.75 6.875 6.75	15.35 15.35 15.35 14.75 15.85	

COKE

Furnace, beehive (f.o.b.) Connellsville, Pa	Net-Ton
Foundry, beehive (f.o.b.) .	 \$18.50
Foundry oven coke	
Buffalo, del'd	 \$33.25
Detroit f.o.b.	 . 32.00
New England, del'd	 33.55
New Haven, f.o.b	 31.00
Kearney, N. J., f.o.b	 31.25
Philadelphia, f.o.b	 31.00
Swedeland, Pa., f.o.b	 31.00
Painesville, Ohio, f.o.b.	 . 34.35
Erie, Pa., f.o.b.	 32.00
Cleveland, del'd	 34.15
Cincinnati, del'd	 32.84
St. Paul, f.o.b.	 31.25
St. Louis, f.o.b.	 33.00
Disminaham fah	 00.00
Birmingham, f.o.b	 30.38
Milwaukee, f.o.b.	 32.00
Neville Is., Pa.	 39.71

LAKE SUPERIOR ORES

ports. Interim pr Freight changes	ices	for 18	59 season.
Openhearth lump Old range, bessem	er .		\$12.70 11.85
Old range, nonbess Mesabi, bessemer Mesabi, nonbessem			11.60
High phosphorus .			11.45

ELECTRICAL SHEETS

22-Gage	Hot-Relled		Reduced Cut Length)		
F.o.b. Mill Cents Per Lb	(Cut Lengths)*	Semi- Processed	Fully Processed		
Field	11.70 12.40	9.875 11.20 11.90	11.70		
Special Meter Meter	13.55	12.475 13.05 14.15	13.55		
Dyname	15.70 16.30	15.20	15.70		
			Driented 19.78		
Trans. 58 Trans. 52	16.88 17.85	Trans. 88 Trans. 73 Trans. 66	20.20		

Producing points: Aliquippa (J3); Beech Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harber (I3); Mansfield (E2); Newport, Ky. (A9); Niles, O. (S1); Vandergrift (U1); Warren, O. (R3); Zanesville, Butler (A7).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

	GRAPHITE	E		CARBON*	
Diam. (In.)	Length (ln.)	Price	Diam. (ln.)	Length (in.)	Price
24 20 18 14 12 10 10 7 6 4 3 23/5 2	84 72 72 72 72 72 60 48 60 60 49 39 24	27.25 26.50 27.50 27.25 28.25 29.50 30.00 29.75 33.25 37.00 39.25 41.50 64.00	40 35 30 24 20 17 14 10 8	100, 110 110 110 72 90 72 72 72 69 60	12.50 11.20 11.70 11.95 11.55 12.10 12.55 13.80 14.25

• Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000
Super duty, Mo., Pa., Md., Ky \$185.00
High duty (except Salina, Pa.,
add \$5.00) 140.00
Medium duty 125.00
Low duty (except Salina, Pa.,
add \$2.00) 103.00
Ground fire clay, net ton, bulk 22.50
Silica Brick
Mt. Union, Pa., Ensley, Ala \$158.00
Childs, Hays, Latrobe, Pa 163.00
Chicago District 168.00
Western Utah 183.00
California 165.00
Super Duty
Hays, Pa., Athens, Tex., Wind-

nam, warren, O., Morrisville	
163.00-	168.00
Silica cement, net ton, bulk, Latrobe Silica cement, net ton, bulk, Chi-	29.75
cago	26.75
Silica cement, net ton, bulk, Ens- ley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.78
Silica cement, net ton, bulk, Utah and Calif	39.00

Standard chemically bonded, Standard chemically bonded,	
iner, Calif	
Burned, Balt	103.00

Standard, Baltimore\$ Chemically bonded, Baltimore	140.00
Grain Magnesite St. % to %-in. a Domestic, f.o.b. Baltimore in bulk.	
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.	46.00

						2.00-54.00	
Dead Burn							
F.o.b. bulk, Pa., W.	va.	odu	cing hio	points	in:	. \$16.75	
Missouri Midwest	Va	lley				15.60	

(Effective Nov. 2, 1959)

MERCHANT WIRE PRODUCTS

	Standard Q Ceated Nells	Woven Wire Feace	"T" Fence Peats	Single Losp Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Gair.
F.o.b. Mill	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City R3 Aliquipoa J3*** Atlanta A8** Bartonville K2**. Buffalo W6.	173 175 175	192	178	214 214	190 198 198	8.75 9.10 9.00	9.675 9.425 9.775 9.55*
Buffalo W6 Chicago N4** Chicago R3						9.00	9.55
Cleveland A6 Cleveland A5 Crawfdav. M4** Denera, Pa. A5 Duluth A5 Fairfield, Ala. T2	175 173 173 173	192 187 187 187		214 212 212 212 212	198 193 193 193	9.00 9.10 9.00 9.00 9.00	9.775 9.55 9.55 9.55
Galveston D4 Houston S2 Jacksonville M4. Johnstown B3**. Joliet, Ill. A5 Kokomo C9	178 184-1 173 173 175	192		217 219 212	198 203	9.10 9.00 9.00 9.10	9.80† 9.775 9.675 9.55 9.65*
L. Angeles B2*** Kansas City S2*. Minnequa C6 Monessen P6 Palmer, Mass. W6	178	192	182	217		9.25 9.25 8.65	10.625 9.80† 9.80† 9.325 9.85*
Sparrows Pt. B3**	175			214	198	9.10	9.775
Struthers, O. Y1° Warcester A5 Williamsport S5.	179	*****				9.30	9.85

* Zinc less than .10¢. *** .10¢ zinc. * Plus zinc extras. * Wholesalers only.

C-R SPRING STEEL

	CARBON CONTENT										
Cents Per Lb F.e.b. Mill			0.61- 0.80	0.81- 1.05	1.86-						
Anderson, Ind. G4	8.95	10.40	12.60	15.60	18.50						
Baltimore, Md. T8	9.50	10.70	12,90	15.90	18.81						
Bristol, Conn. W/2		10.70	12.90	16.10	19.30						
Boston 78	9.50	10.70	12.90	15.90	19.30						
Buffalo, N. Y. R7	8.95	10,40	12.60	15.60							
Carnegie, Pa. S9	8.95	10, 40	12.60	15.60	18.5						
Chicago				15.60							
Cleveland A5	8.95	10.40	12.60	15.60	18.5						
Dearborn SI			12.70								
Detroit D/			12.70	15,70							
Detroit D2			12.70								
Dover, O. G4			12.60	15.60	18.5						
Evanston, Ill. M8			12.60								
Franklin Park, Ill. 78			12.60	15.60	18.5						
Harrison, N. J. Cll				16.10							
Indianapolis R5			12.60	15.60	18.5						
Los Angeles CI			14.80	17.80							
New Britain, Conn. S7.			12.90	15.90	18.8						
New Castle, Pa. B4			12.60	15.60							
New Haven, Comn. DI.	9 4		12.90								
Pawtucket, R. I. N7			12.90								
Riverdale, Ill. Al	9 8		12.60								
Sharon, Pa. S1			12.60								
Trenton, R4			12.90								
Wallingford W1	0 4		12.90								
Warren, Ohio T4	2 91	10.4									
Warren, Ohio 17		10.4	12.90								
Youngstown R5			12.60								
I sumgetown 10	1 2 . 11	114.0	F1 24: 00	10.00							

BOILER TUBES

3 per 100 ft, carload lots	S	ize	Sean	Elec. Weld	
cut 10 to 24 ft. F.o.b. Mill	OD- In.	B.W.	H.R.	C.D.	H.R.
Babrock & Wilcox	2 21/2 3 31/2 4	13 12 12 12 11 10	40.28 54.23 62.62 73.11 97.68	63.57 73.40	35.74 48.13 55.96 65.86 88.16
National Tube	2 21/2 3 31/2 4	13 12 12 12 11 10	54.23 62.62 73.11	73.40	35.74 48.13 55.59 65.86 88.16
Pittshurgh Steel	2 21/2 3 31/3 4	13 12 12 11 10	40.28 54.23 62.62 73.11 97.06	63.57 73.48	

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

		Powders
COII	IDSCURE	1.0 Widers

Electrolytic, imported, f.o.b. 29.50 Electrolytic, domestic Sponge	to	$34.50 \\ 11.25$
Atomized	to	11.25 12.00 88.00
Welding Powders*		8.10
Cutting and Scarfing Powders*		9.10

Copper Powders

Hydrogen reduced, f.o.b	00.00	43.2
Bronze Chromium, electrolytic	47.20	to 51.50
Lead		19.00
Molybdenum	\$3.60 1	to \$3.98
Nickel Silver		53.50
Nickel Steel	is meta	al value
Stainless Steel, 302 Stainless Steel, 316		\$1.07
Steel, atomized, prealloyed, 4600 series14.00 plu	s meta	al value
Thin 144 ml		

Tin14¢ plus metal value Titanium, 99.25+%, per lb.,

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)
Pct. Discounts

Bolts	Con- tainers	Con- tainers	20,000 Lb.	40,000 Lb.
Machine 1/2" and smaller x 3" and shorter	55	57	61	62
56" diam. x 3" and	99	91	01	02
shorter	47	4914	54	55
3/" thru I" diam x		****		
6" and shorter %" thru 1" diam. longer than 6" and 11%" and larger x	37	3914	45	46
all lengths Rolled thread, 1/2" and smaller x 3"	31	34	40	41
and shorter Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and	55	57	61	62
smaller x 6" and shorter	48	503-6	55	56

Distributor prices are 5 pct less on bolts and square nuts.

Nuts,	Hex,	HP	reg.	&	h	/ y					price
% in. % in.	or si	nalle	r							 ×	62
1% in.	and.	larg	er .	usiv	e		*	* *	*)		56 51 ½
C. P.											
% in.	or sr	nalle	r								62

1% in. and larger	51 1/2
Hot Galv. Hex Nuts (All Types)	
% in. and smaller	41
e	

% in. c	or sma	iler .					62
% in. to	0 1 1/2 1	n. inc	lusive				56
1% in. (Add	25 pc	t for	broke	698	case	or	51 ½ keg

					-					
File	nish	ed								
3/4	in.	and	smaller		 	 			65	

% in. and	smaller	* * *	****		***	65
Rivets				Base	per	100 lb
1/2 in. and	larger .					\$12.85 # List
7/16 in. ar	d small	er .				15

Discount (Packages) Cap Screws Full Finished H. C. Heat Treat
New std. hex head, packaged Full Case

148

%" diam. and smaller x 6" and shorter	54	42
%", %", and 1" diam. x 6" and shorter %" diam. and smaller x	38	23
longer than 6"		* *
longer than 6"		

	Full-	18 Steel Finished ons Bulk
4" through %" dia. x 6" and shorter 4" through 1" dia. x 6"	59	48
and shorter	45 throu	32 igh %"
diam., 5,000 pieces; %" tl 2,000 pieces.	hrough 1	diam.,

Machine Screws & Stove Bolts

		Disco	unt
Plain Finish Cartons		Mach. Screws	Stove Bolts
Bulk	Quantity	00	00
To ¼" diam.	25,000-and over	60	**
5/16 to %" diam. incl.	15,000-200,000	60	

Machine Screws & Stove Bolt Nuts

		Dis	count
In Cartons	Quantity	Hex 16	Square 19
In Bulk %" diam. & smaller	25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)
Copper
Rolled elliptical, 18 in. or longer, 5000 lb lots
Brass, 80-20, ball anodes, 2000 lb or more
(for elliptical add 1¢ per lb) Nickel, 99 pct pius, rolled carton,
(Rolled depolarized add 3¢ per lb)
Cadmium, 5000 lb

Chemicals	
(Cents per lb, f.o.b. shipping point	it)
Copper cyanide, 100 lb drum Copper sulphate, 100 lb bags, per	65.90
cwt.	22.75
Nickel salts, single, 100 lb bags Nickel chloride, freight allowed,	36.00
100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums (Philadelphia price 25.00)	24.70
Zinc cyanide, 100 lb	60.75
N. Y	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham			125.8
New York			138.5
Chicago			140.9
San Francisc	D-I. A.		148.6
Dec. 1955.	value.	Class B	or heavier
5 in. or large			
planation: p			
Source: U. S.			

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

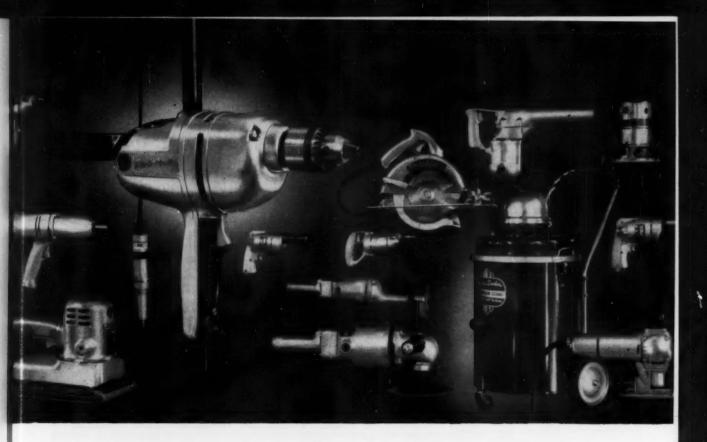
Callin in tou He wa parts to ass and se You ate to

tool o buyin He mendi "Kno invent house saves BED 11/4 works l tenance tight sp

Cities	Sheets			Strip Plates		Shapes	В	Bara		Alloy	Bars	
City Delivery t Charge	Hot-Rolled (18 ga. & hvr.).	Cold-Rolled (15 gage)	Galvanized (10 gage)††	Hot-Rolled		Standard	Hot-Rolled (merchant)	Cold- Finished	Hut-Rolled 4615 As rolled	Hot-Rolled 4148 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4746
Atlanta	8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24				
Baltimore**\$.10	9.90	10.10	10.09	11.55	10.00	10.65	10.15	11.90	17.48	16.48	21.58	20.83
Birming ham **	9.43	10.20	10.46	10.91	9.79	10.00	9.59	13.14	16.76	12000	******	
Boston**10	10.52	11.27	11.82	12.17	10.42	10.72	10.34	13.45	17.69	16.69	21.79	21.04
Buffalo**15	9.80	10.50	11.35	11.30	10.25	10.40	9.90	11.60	17.45	16.45	21.55	20.80
Chicago**	8.69	10.35	11.10	10.35	8.62	9.16	8.79	18.88	17.10	16.10	19.70	20.45
Cincinnati**15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68	17.42	16.42	21.52	20.77
Cleveland ** 15	8.691	9.89	11.02	10.47	8.88	9.67	8.90	11.40	17.21	16.21	21.31	20.56
Denver 20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19			******	20.84
Detroit**15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	17.38	16.38	21.48	21.03
Houston **	9.65	9.65		10.85	9.65	9.35	8.90	13.10	17.50	16.55	21.55	20.85
Kansas City 15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles**	9.951	11.55	12.20	11.55	10.00	10.00	9.10	14.20	18.30	16.45	21.30	20.80
Memphis 15	8.55	9.80		8.60	8.93	9.01	8.97	12.11		*****		
Milwaukee**15	8.83	10.49	11.24	10.49	8.76	9.30	8.93	11.04	17.24	15.34	21.24	19.09
New York 10	9.27	10.59	11.40	9.74	9.87	9.84	10.09	13.35	16.16	15.60	20.10	19.35
Nerfolk28	8.20			8.90	8.65	9.20	8.90	10.70			******	
Philadelphia 10	8.30	9.35	10.71	9.35	9.25	9.20	9.50	12.05	16.58	15.58	20.08	19.33
Pittsburgh**15	8.69	9.84	10.91	10.45	8.62	9.78	8.79	11.40	17.10	16.10	19.70	20.45
Pertland	10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30	18.50	17.45	20.75	20.25
San Francisco** . 10	11.00	11.952	11.50	12.25	11.00	10.95	10.75	15.20	18.30	16.35	22.90	20.60
Seattle**	11.55	12.30	12.50	12.65	11.00	10.20	11.10	16.20	18.60	17.80	22.78	22.20
Spokane**15	11.70	12.45	12.65	13.30	11.15	11.35	11.75	16.35	17.75	17.95	21.58	22.35
St. Louis** 15	9.07	10.73	11.48	10.73	9.06	9.76	9.17	11.43	17,48	16.48	21.58	19.33
St. Paul**15	8.95	9.46	10.62	10.47	8.75	9.48	8.85	11.64		16.69		21.04

†† 10¢ zinc. 2 Deduct for country delivery. 1 15 ga. & heavier; 2 14 ga. & lighter.

^{*} F.O.B., shipping point.



For Depth of Line...Depth of Service Rely on your Black & Decker Distributor!

Calling your Black & Decker distributor puts you in touch with an expert on portable electric power. He warehouses a giant reservoir of tools, equipment, parts and materials—all carefully selected by him to assure you high quality, dependable performance and service.

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Title

Company

Address

City

Zone
State

Base price cents per lb. f.e.b. milt

Producing Point	Basic	Fdry.	Mell.	Bess.	Low Phes.
Birdsboro, Pa. B6		68.50	69.00	69.50	
Birmingham R3	62.00	62.50°	*****	******	*****
Birmingham W9.,	62.00	62.50°	66.50		******
Birmingham U4	62.00	62.50°	66.50		
Buttalo R3	66.00	66.50	67.00	67.50	*****
Butinto III	66.00	66.50	67.00	67.50	******
Buffalo W6	66.00	66.50	67.00	67.50	*****
Chester P2	68.00	68.50	69.00		
Chicago 14	66.00	66.50	66.50	67.00	
Cleveland A5	66.00	66.50	66.50	67.00	71.00
Cleveland R3	66.00	66.50	66.50	67.00	
Duluth /4	66.00	66.50	66.50	67.00	71.801
Erie 14	66.00	66.50	66.50	67.00	71.00
Everett M6	67.50	68.00	68.50		
Fontana K1	75.00	75.50			
Geneva, Utah C7.	66.00	66.50			
Granite City G2.	67.90	68.40	68.90		
Hubbard Y1			66.50		
ronton, Utah C7.	66.00	66.50			
Midland Cl1	66.00				
Minnegua Co	68.00	68.50	69,00		
Monessen P6	66.00				
Neville Is. P4	66.00	66.50	66.50	67.80	71.881
L Tonawanda TI		66.50	67.00	67.50	
Sharpaville S3	66,00		66.50	67.00	
io. Chicago R3	66,00	66.50	66.50	67.00	
So. Chicago W8.	66,00		66.50	67.00	
wedeland A2	68.00	68.50	63.00	69.50	
Toledo /4	66-00	66.50	66,58	67.00	******
roy, N. Y. R3	66,00	68.50	69.00	69.50	73.00
oungstown Y/			66.50		10.00

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over hase (1.75 to 2.25 pct except low phus. 1.75 to 2.09 pct. 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, 32 per ton for 0.50 to 0.75 pct nicke, 31 for each additional 0.25 pct nicke, 1.4dd \$1.00 for 0.31-0.69 pct phus.

Add 31.00 for 0.31-0.69 pct phea.

Silvery Iron: Buffalo (6 pct), H1, 379.25; Jackson J1, 14

(Globo Div.), 378.00: Niagrar Falls (15.01-15.50), 5101.00;

Keokuk (14.01-14.50), 5105.90; (15.51-16.00), 3106.50.

Add 31.00 per ten for each 0.50 pct afficen over base (6.01 to 6.50 pct) up to 18 pct. Add 31.25 for each 0.50 pct mananese over 1.00 pct. Beast-ver allevery pig iron (under 1.0 pct plns.); 564.00. Add 31.00 premium for all grades afferty to 18 pct.

† Intermediate low phos.

Product	201	202	301	362	363	384	316	321	347	483	410	416	430
Ingets, reroll.	22.75	24.75	24.00	26.25	-	28.00	41.25	33.50	38.50	-	17.50	-	17.75
Slabs, billets	28.80	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	-	22.25	-	22.54
Billets, forging	-	37.75	38.75	39.50	42.50	42.00	64.50	48.75	\$7.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	\$7.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	48.25	40.25	31.75 48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	-	44.25	69.25	53.50	63.50	-	31.00	-	32.00
trip, cold-rolled	45.00	49.25	47.50	52.00	54.75	55.00	80.75	65.50	79.25	49.25	49.25	42.50	40.75
Vire CF; Red HR	-	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., CII; Brackenridge, Pa., A3; Butler, Pa., AI; Vandergrift, Pa., UI; Washington, Pa., W2, J2; Baltimore, EI; Middletown, O., A7; Massillon, O., R3; Gary, UI; Bridgeville, Pa., U2; New Castle, Ind., I2; Detroit, M2; Louisville, O., R5.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeeaport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville Pa., U2; Detroit, M2; Detroit, S1; Canton, Massillon, O., R3; Harrison, N. J., D3; Youngstown, R5; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Cann., U3 (plus further conversion extras); W1 (25¢ per lb. higher); Symour, Conn., S13, (25¢ per lb. higher); New Bedford, Mass., R6 Gary, U1, (25¢ per lb. higher); Baltimore, Md., E1 (300 series only).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., 22; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R5; S. Chicago, U1; Syracuse, N. Y., C1; Watervillet, N. Y., A3; Waukegan, A5; Canton, O., 75, R3; Ft. Wayne, 14; Detroit, R5; Gary, U1; Owensboro, Ky., G5; Bridgeport, Ceen., N8; Ambridge, Pa., B1.

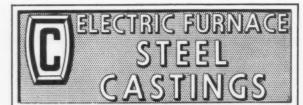
Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Newark, N. J. D2; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2; Detroit, R5; Reading, Pa., C7; Bridgeport, Conn., N8.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

Plates: Ambridge. Pa., B7; Baltimore, E1; Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Ambridge, Pa., B7; Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKecaport, F1; Massillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1; Owensboro, Ky., G5; Bridgeport, Conn., N8; Reading, Pa., C2.

(Effective Nov. 2, 1959)



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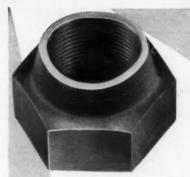
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Three sectors of the tapered portion of the CONELOK nut are preformed inwardly (Fig. 1). When

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duces intimate contact between

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and bolt threads (Fig. 2). The

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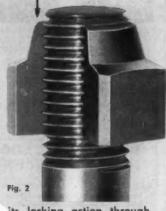
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New One-Piece Conelok with prevailing torque



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DIRECT CURRENT MOTORS

Qu.	H.P.	Make	Туре	Volts	R.P.M.
200	3000	Whee.	Rev.	600	600
100	2200	Whse.	Vent.	600	92/133
400	1500	Whie.	Rev.	600	600
400	700	Whse.	Vent.	250	300/700
200	645	8.48.	Rev.	300	1000
2	600	Al.Ch.	Mill	600	300/600
1	600	Whse.	Mill	259	110/220

SLIP RING MOTORS

		3 Pho	se-60 C	ycle	
Qu.	H.P.	Make	Туре	Volts	R.P.M.
1	2500	Al.Ch.	Mill	2200 .	296
1	1800	Whse.	Mill	2300	252
3	1500	G.E.	Mill 6600	/4160-V.	444
1	1000	Whee.	C.W.	2300	441
1	500	Ideal	8-4-20	4800	708
1	500	G.E.	MT-410	2200	585
1	500	Al.Ch.	ANY	2200	505
1	500	Al.Ch.	ANY	2200	293
1	400	Al.Ch.	ANY	2200	505
1	400	Whee.	C.W.	2200	200
1	356	G.E.	1-15M	2200	1180
1	350	G.E.	MT-412	2200	450
1	300	Whse.	CW-1012	2200	704
1	300	G.E.	1-15B-M	440	1200

SYNCHRONOUS MOTORS

		3 Lugse-on	CACIE	
Qu.	H.P.	Make	Volts	R.P.M.
1	5600	Whee.	4760	1200
2	1.000	Whee.	4160	450
1	960	G.E.	460	300
1	700	El. Mchy.	440	200
1	500	El.Mchy.	2300	720
1	450	Whse.	220	128
1	300	G.E.	2200	600
1	200	Whse.	440	600

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THE CLEARING HOUSE

N.Y. Area Dealers Hard Hit by Strike

Used machine business in the New York area is way off because of the steel strike.

Most dealers say they will have to wait out the strike and the critical steel shortage before business will improve.

■ Effects of the nationwide steel strike are farflung. It is currently hurting used and rebuilt machinery dealers in the New York area in their cash registers. The fall months are normally brisk ones for dealers here, but the strike-caused steel shortage has "padlocked buyers" pockets.

"Customers won't tie up money in machines when they have no steel to put on them," sums up one local dealer. And the tight money situation has made customers even more wary of spending cash when the expense will not show a fast return.

Inquiries Low-Most prospects today are not even bothering to look around or line up tools against the end of the strike. Inquiries are far below normal, and no pickup is expected until steel starts flowing to metalworking plants again.

This area, with its manufacturing emphasis heavy on small plants and subcontractors, is particularly hard hit. These plants are precisely the ones that had the least leverage on mills to pressure for steel delivery in the hectic days before the strike started. And those firms fortunate enough to be on warehouse books find that the cupboard is almost bare. Further, tying up money in inventory is especially burdensome to most smaller firms.

Construction Off — Construction machinery and related items, perennial best sellers in the Northeast, have been hard hit. By the halting of many building projects, through lack of steel and imminence of the winter close-in on construction.

The steel strike has brought additional complications to construction: Future projects have been shelved until builders can get some idea of when steel supplies will start flowing through pipelines again. Hence many jobs which might have kept job shops through the winter months are twice delayed -once by lack of steel, and later by delay of planning and design.

Postponed Plans-Industrial expansion plans are also postponed. The sharp falloff in demand for cranes, previously much in demand here, is a clear symptom. As in other areas, this cuts dealers two ways. First, loss of subcontract jobs related to expansion slows buyers. Second, many machinery customers had expansion plans themselves, and these also are postponed.

The trade finds little to do but wait out the strike and the slow steel delivery period after it. Dealers are convinced that a healthy demand for used and rebuilt tools is accumulating, but recognize there is little chance of feeding it until metal is again available. Some worry that the combination of tight money and present lack of business may leave prospective buyers strapped for cash to pay for machines even when the steel to put on them is available.

CO

BENDING BORING #45 GA BRAKES-CRANES-

DRAW 8

FLANGI FORGIN FURNAC 15 ton Comp

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10' x 10 Ga. Bertach Initial Type

13' x 3/16' Bertach Initial Type—New 1957

20' x 'g' Niles Pyramid Type

32' x 'g' Baldwin Pyramid Type—New 1942

32' x %" Baldwin Pyramid Type—New 1942

BORING MILLS

#45 G&L Bor-Drill-Mill, 4%" Bar
Cinn.-Gilbert Horiz. 4%" dla. Spindle

BRAKES—PRESS TYPE

90 ton Nisaars. Model 90-8-10

CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton P&H

10 ton Shaw

120' Span 230' Voit D.C.

10 ton Whiting

170' Span 230' Voit D.C.

15 ton Milwaukee

15' 6" Span 230' Voit D.C.

15 ton Shepard Niles

15' 6" Span 220' 3/60 A.C.

20 ton P&H

30 ton Shepard Niles

57' 6" Span 220' 3/60 A.C.

57' 6" Span 220' 3/60

30 ton Shaw

70' Span 230' Voit D.C.

120 ton Niles

67' Span 220' 3/60

30 ton Shaw

70' Span 230' Voit D.C.

71' Span 220' 3/60

71'

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7,000 lb. Draw Bench, 51 ft. Draw
10,000 lb. Draw Bench, 50 ft. Draw
30,000 lb. Draw Bench, 41 ft. Draw
35,000 lb. Draw Bench, 41 ft. Draw

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FLANGING MACHINE
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48" Hot Strip Pickie Line, M.G. Set. Uncoller, Scale
Breaker, Leveler, Dryer, Upcoller, Conveyor
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300 ton Southwark Platen 28" x 28", Stroke 25"
500 ton Watson Stillman Plercing Press, 48" x 72"

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FOR NON-FERROUS TUBING FINISHED MIN. SIZE 2" to MAX. 8" INSPECTION UNDER POWER

sawt ton B-L-H Bed 88" x 68", Stroke 40"
PUNCH & SHEAR COMBINATIONS

23'ly Buffalo Ironworker
Coper & Notcher, Punch 1"%", Shear, 2\%" Rd.

2" So.

4\% x 30 U. D. Buffalo Punch, Shear, Bar Cutter,
Punch 1\% x 1\%; Shear 3" Rd., 2\%" Sq., 6 x 6 x

\%" Angles ROLLS—FORMING

8 Stand, Tishken 7% C to C of four ROLL FORMING MACHINE TOOLING Metal Floor & Roof Deck Forming Rolls—NEW. For any standard machine with 3" or 3\%" spindle

Tracewell Ring Rolling Mill for 7" wide strip
10" x 10" Single Stand Two High
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16" x 24" Two Stand Two High
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12" x 32" Birdsboro 3-Hi Bar Mill
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Pels DT-36B Armor Plate. Capy 15" beams & channels, 6" x 6" x 5%" angles Pele DT-1895 Annual Pele D

10' x %" Niagata No. 921 SLITTERS 38" Waterbury Farrel, Slitting Line, Arbor 4½" Dia, 36" Paxson Slitting Line, 4½" Dia, Arbor STRAIGHTENER
Torrington #1734 12 Roll, Cap. 1%", Rd. 1-9/16"
SWAGING MACHINE

SWAGING MACHINE
#614A Fenn 2-Die Capacity 35% "Tube, 11%" Solid
10" Die Length, Hydraulic Feed
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20,000 & 60,000# Universal Hydraulic
50,000, 100,000, 200,000# Univ. Beam Type

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3 phase 60 cycle SLIP RING

Qu.	H.P.	Make	Type	Volts	Speed
1	1750	G.E.	M-579BS	4800	1800
1	1500	G.E.	MT	6600	1187
1	800	Whse.	CW	350	1776
1	700	A.C.		2300	500
1	600	Whae.	CW-4-32D		1778
1	500	G.E.	MT-412	2200	439
1	500	Whar.	CW	550	350
1	300	G.E.	MTP-561	2200	1800
1	200	G.E.	IM	440/2200	589
1.	125	unused	MT-557	220/440	1200
1	100	G.E.	MT-564	440/220	450
î	250	G.E.	1M-16	220/440	875
î	250	A.C.	ANY	550	600
î	250	Whee.	CW	2200	450
1 1	250	Cr. Wh.	Size 29Q	2300	350
î	250	G.E.	MT-424Y	4000	257
1	250	G.E.	IE-13B	220	1800
2	200	Whae.	CW-890	2300	1775
1	200	Cr. Wh.	8R-26QB	440	505
2	200	G.E.	IM-17A	2200	435
3	100	A.C.		440	695
		SQUIR	REL CAGE		
1	100	Whee.	B.B.C8-60	7 228/440	1780
1	800	G.E.	KT-573	2200	1180
1	500	G.E.	FT-559 A	2200	3600
2 4	500	Whae.	CS-1115	3300 8	63/445
4	500	Whse.	CS-1216	2200	500
2	450	E11.	F-3910	2200	1200
1	400	Whse.	C8-7151-		
		****		3600/4000	3585
1	300	Whse.	C8-1002	2300/440	600
2	200	Whee.	CS-855S	000 / 110	
1	150	G.B.	D.P.	220/440	1750
1	150	Whise.	FT-558 CB	2200	875 580
1	125	Whee.	C8-764C	220/440	1160
8	100	Whee.	C8-769C	2200/440	1100
	100	Wille.	C9-108C	2200/110	1100
			IRONOUS		
1	6000	G.E.	ATI .8		
1	3500	G.E.	P.F. :	2200/6600	600
			P.F. 460	00/2300/400	0 360
1	2000	G.E.	ATI	2300	900
2	1750	G.E.	ATI	2800	3600
1	1750	G.E.		300/4600	900
1	700	G.E.	TS .8P.F.	2300	1200
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Sanarcer: Inh. 7D Moline, vert. 6 spdl. syl.

Sector: No. 7D Moline, vert. 6 spdl. syl.

Sector: No. 7D Moline, vert. 6 spdl. syl.

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Sector: 180-ton No. 27 Williams & White
Centering Machine: 6" x 72" No. 56 Sundstrand
Chucker: 50", 655 New Britain, 1943
Campressor: 566 CFM Sullivan, 2 stage, 125 HP
Drill. Deep Mole. No. 420 W. F. & John Barnes
Drill: 21" Cin. Bick., 58, 1L, late
Drill: 21" Cin. Bick., 58, 1L, late
Drill, Radial: 4" 11" Carlten, 1941
Grinder, Criost., No. 2 Cintt., 1951
Grinder, Cyl.: 10" x 36 Nevton type C hydr., 1943
Grinder, Cyl.: 10" x 36 Nevton type C hydr., 1943
Grinder, Cyl.: 10" x 36 Nevton type C hydr., 1943
Grinder, Cyl.: 10" x 36 Nevton type C hydr., 1942
Hammer: 190 lb. Murco upright
Lathe: 25" x 16" Axelson Hy. Dy. TA, 1942
Lathe: 126" x 56" ce Niles
Mill: Boring: 90" Gisholt, vert.
Mill: 3H Kal' piain vert. hel., 1944
Hammer: 190 lb. Sol. 194
Presses: 190 & 150 ten No. 56 & 57 Tolede S.S.
Pross: 125 ton No. F-1125-30 Clearing crankless
Press: 125 ton No. F-1125-30 Clearing crankless
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Press: 500 ton Mo. 750%-72 Tolede teggle
Press: 250 ton No. 56 Tolede con Hero
Press: 150 ton Herm the Bilas Knuckle Jl. (2)
Press: 150 ton Herm the Bilas Knuckle Jl. (2)
Press: 150 ton Herm the Bilas Knuckle Jl. (2)
Press: 500 ton No. 55 Bils bining heped
Press: 250 ton No. 56 Tolede con Herm
Press: 150 ton Herm the Bilas Knuckle Jl. (2)
Press: 150 ton Herm the Bilas Cons. Herm
Press: 150 ton Herm the Bilas Cons. Herm
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TECHNICAL SALES

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Production Supervisor-Rolled Products

The position requires the daily supervision of the rolling and finishing areas. The rolling area consists of multi-purpose rolling facilities, unique in design, and capable of very diversified operations. Both hot and cold rolling of sheet, bars and coils of refractory metals will be involved. Experience in finishing, heat-treating and inspection is essential.

Production Supervisor-Melting

The position requires previous experience in consumable electrode-cold mold-arc melting operations. In addition, thorough knowledge of electrode preparation and the behavior of refractory metals on melting and solidification is required.

Trained personnel in physical and mechanical metallurgy or those with equivalent experience are needed for these supervisory openings. Please forward résumé, including details of education, experience and salary expected to Mr. A. F. Hartford, Employee Relations Department, E. I. du Pont de Nemours & Company, Wilmington, Delaware. Replies held confidential.

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SITUATION WANTED

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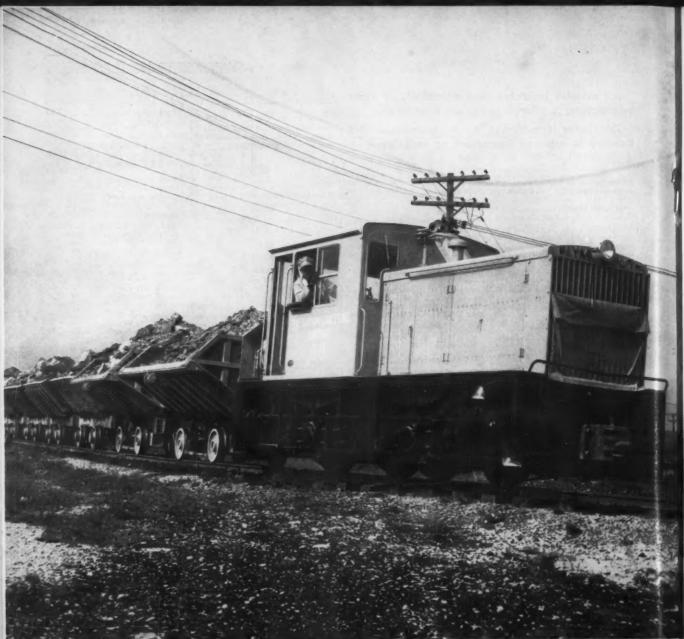
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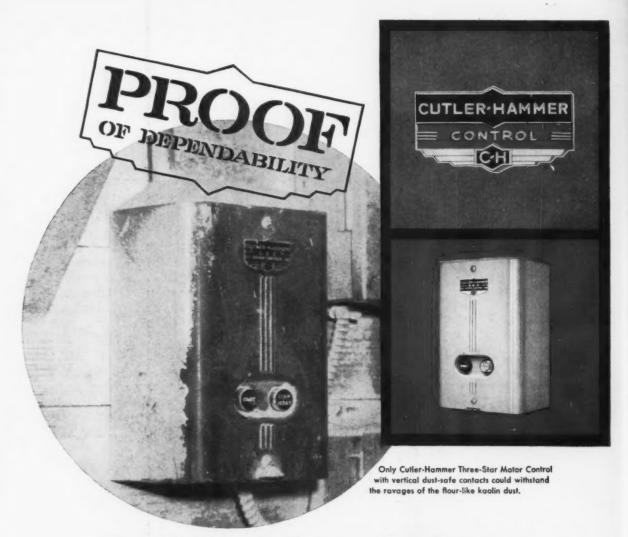
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